# Navy Response to Agency Comments on the Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment

## Hunters Point Shipyard
## San Francisco, California

## December 8, 2006

Prepared for:
**Base Realignment and Closure**
**Program Management Office West**
**San Diego, California**

Prepared by:
**SulTech, A Joint Venture of Sullivan Consulting Group and Tetra Tech EM Inc.**
**1230 Columbia Street, Suite 1000**
**San Diego, California 92101**

Prepared under:
**Naval Facilities Engineering Command**
**Contract Number N68711-03-D-5104**
**Contract Task Order 011**

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DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

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December 08, 2006

Mr. Michael Work (SFD 8-3)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. James Ricks (SFD 8-1)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710

Mr. Jim Ponton
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Dear BCT members:

Enclosure (1) is the Navy Response to Agency comments (RTCs) on the Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment (TMSRA). Please review these RTCs in preparation for our January 9, 2007 meeting. As you know, the Navy has agreed to produce both a draft final and final version of the TMSRA. We anticipate issuing the Draft Final TMSRA on April 12, 2007 per our latest FFA schedule.

Should you have any concerns with this matter, please contact Ms. Lara Urizar at 619-532-0960 or Mr. Keith Forman at (619) 532-0913.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Director

Enclosure: 1. Navy Response to Agency Comments on the Draft, Parcel B Technical Memorandum in Support of a Record of Decision Amendment, March 28, 2006

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Copy to: (Hard Copy and CD)

Dr. Daniel Stralka (SFD-8)
U. S. EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Ms. Karla Brasaemle
Tech Law, Inc.
90 New Montgomery Street, Suite 1010
San Francisco, CA 94105

Ms. Dorinda Shipman
Treadwell & Rollo
555 Montgomery Street, Suite 1300
San Francisco, CA 94111

Mr. Michael Jacobvitz
MACTEC Engineering & Consulting
5341 Old Redwood Highway, Suite 300
Petaluma, CA 94954

Mr. Jim Polisini
Department of Toxic Substances Control
1011 Grandview Dr.
Glendale, CA 91201

Ms. Diane Silva (3 Hard Copies +1 CD)
937 N. Harbor Drive, Bldg 1, 3rd Floor
San Diego, CA 92132

Copy to: (CD only)

Ms. Amy Brownell
Department of Public Health
1390 Market Street, Suite 910
San Francisco, CA 94102

Mr. Michael Sharpless
Paul Hastings
55 2nd Street, 24 Floor
San Francisco, CA 94104

Ms. Barbara Bushnell
6 Vistaview Court
San Francisco, CA 94124

Ms. Nicole Franklin
City of SF Redevelopment Agency
1 South Van Ness Avenue
San Francisco, CA 94103

Ms. Rona Sandler
Office of City Attorney
City Hall, Room 234
1 Dr. Carlton B Goodlett Place
San Francisco, CA 94102

Mr. Jeff Austin
Lennar Mare Island
49 Stevenson Street, Suite 600
San Francisco, CA 94105

# Navy Response to Agency Comments on the Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment

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**TABLE 1: DRAFT RESPONSES TO COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

The table below contains the responses to comments received from the U.S. Environmental Protection Agency (EPA) on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by Michael Work (EPA) on June 15, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| **General Comments** | | | |
| 1. | --- | The Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment (TMSRA), a document written to support the need for a ROD amendment, does not make the case clearly and transparently that the currently approved remedy is no longer workable. Indeed, this document is silent on what are the major reasons why we are proceeding toward a ROD amendment, i.e., reasons related to either cost or implementability. If the currently approved remedy cannot be implemented due to irresolvable technological or engineering problems, then this TMSRA needs to fully explain and document that problem. If it is more of an issue related to cost rather than implementability, then this TMSRA needs to provide that demonstration. | • The text of the first paragraph of Section 1.1 on page 1-2 will be revised as follows to further explain the need for a ROD amendment. Similar text will be added to the executive summary (see Attachment 1).<br><br>"Table 1-1 summarizes the CERCLA-related activities conducted at Parcel B. Parcel B has completed the steps through post-construction reporting (including the five-year review); however, updated information about the site that became available during the remedial action indicates that modifications to the selected soil and groundwater remedies should be considered. *The five-year review (Tetra Tech 2003b) concluded that the remedy selected in the ROD (Navy 1997) needs to be modified to be protective in the long term. The BCT has extended the schedule of CERCLA activities (contained in the FFA) to evaluate potential modifications to the Parcel B remedy and support the preparation of this TMSRA.*<br><br>*A ROD amendment will be proposed for Parcel B by the Navy if the Navy determines that proposed changes to the selected remedy based upon the evaluations in the TMSRA will "fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost" as described in the NCP at 40 CFR 300.435(c)(2)(ii). For example, the consideration of parcel-wide covers to address soil contamination instead of excavation may represent a fundamental change in the scope of the remedy. For groundwater, addition of active groundwater treatment methodologies to the remedy may be a fundamental change in the scope.*<br><br>The updated information about the ubiquitous nature of certain ~~chemicals~~ *metals* in soil, *the presence of methane and radiological contamination, the need to update certain cleanup levels*, and the more comprehensive understanding of groundwater, together with the ~~currently~~ planned land use, indicate the need to *revise the conceptual site model, evaluate* ~~support~~ additional remedial actions, and *evaluate* amending the ROD. This TMSRA provides the support for the |

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| | | | decisions *regarding remediation alternatives* ~~in an updated proposed plan and ROD amendment that will come later,~~ in the same way that the FS supported the initial proposed plan and ROD. The TMSRA provides a practical path forward to *evaluate* ~~undertake~~ additional remedial actions that will support parcel transfer.<br><br>*The discovery of demolition debris fill at IR-07 and IR-18 as well as a small area where methane was detected in soil gas at IR-07 created a need to revise the conceptual site model. The discovery of radiological contamination in soil at Parcel B also affects the conceptual site model. The original conceptual site model does not address the debris fill, methane, or radiological contamination and, consequently, the excavation and off-site disposal remedy selected for soil in the ROD will not be protective in the long term. The increased understanding of groundwater, including the results of groundwater monitoring and treatability studies, has allowed for a more focused evaluation of potential groundwater remedies than was possible in the ROD. In addition, the groundwater remedy needs to be expanded to account for the increased potential risk from VOCs and mercury in groundwater and provide remediation alternatives to address this risk. Updated cleanup levels for VOCs in the vapor phase need to be addressed by evaluating additional remedial alternatives.* This TMSRA provides the support for the decisions that will be made in an updated proposed plan and ROD amendment that will come later, in the same way that the FS supported the initial proposed plan and ROD.<br><br>*The current remedy is evaluated in light of this updated site information and new remediation alternatives are proposed in this TMSRA. Both the current and proposed remediation alternatives are evaluated addressing the nine criteria described in the NCP at 40 CFR 300.430(e)(9)(iii) later in Section 6.0 of this document. Implementability and cost are reviewed in that analysis as provided by the NCP. Upon completion of the revised detailed evaluation of remedial alternatives, the Navy will comply with the requirements of the NCP at 40 CFR 300.435(c)(2) in making a formal determination concerning a ROD amendment. The proposed decision to amend the ROD will be addressed in the proposed plan that will follow the TMSRA. The following section describes the need to amend the ROD in more detail."*<br><br>• The proposed new Section 1.2 is provided as Attachment 1 to this response to comments document. Attachment 1 also contains new Section 6.5, which evaluates the current ROD remedy against the NCP criteria. Section 6.5 will |

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| | | | complement the existing sections that evaluate the newly developed remediation alternatives proposed in the TMSRA against the NCP criteria. |
| 2. | --- | EPA was disappointed that the new array of alternatives are mostly based on preventing complete pathways and do not propose significant effort to conduct further cleanup which might result in an expansion of the area(s) not required to maintain cover. We cannot help but imagine some alternative which considers the achievement of industrial cleanup levels for more of the parcel with some effort to negotiate advantageous spatial extent of reuse areas with the reuse authorities. | • Remediation alternatives in the TMSRA were selected to support the planned reuse of Parcel B, most of which will be subject to residential, not industrial, exposure conditions. Arsenic, even at concentrations below the Hunters Point ambient level (HPAL), represents an excess lifetime cancer risk greater than $10^{-6}$. The Navy proposes to use covers over all redevelopment blocks (informally termed "full lot coverage") and institutional controls to address potential risks caused by ubiquitous metals and debris fill at IR-07 and IR-18. Since the major risk driver is arsenic, and its occurrence is parcel-wide, the exposure pathway must be broken. The Navy is still committed to removing spills and releases where practical. For example, excavation of mercury at IR-26 will be considered in the draft final TMSRA. |
| 3. | --- | It is not clear from the Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment, dated March 2006 (the TMSRA) why the potential for hydraulic communication was not considered for the three Risk Plumes identified in Attachment A4 of the Human Health Risk Assessment (HHRA).<br><br>The fourth and fifth paragraphs of Section A4.3 indicate that during the HHRA the potential for hydraulic communication between the A and B Aquifers was only evaluated for small areas of the western portion of Parcel B, and that none of the groundwater plumes (IR-10A, IR-10B and IR-25) were assumed to be in communication with the B-Aquifer. This interpretation should be supported by pump test results that show no communication between the aquifers at the groundwater plume locations before the potential for hydraulic communication can be dismissed from the Site Conceptual Model.<br><br>• According to Figure 5 of the Technical Memorandum for the Distribution of the Bay Mud Aquitard and Characterization of the B-Aquifer (the B-Aquifer Tech Memo), the A-Aquifer appears to be in contact with the B-Aquifer (i.e., the Bay Mud Aquitard is absent) in the western portion of IR-10 and at Building 134 in Parcel C (adjacent to the parcel boundary). This stratigraphic relationship appears to suggest that the two aquifers are predominantly in communication in the area of the IR-10A and IR-10B Risk Plumes, | • The basis for the groundwater risk evaluations in the HHRA is data from groundwater samples. Aquifer test data to evaluate potential communication between aquifers are not available. Only two monitoring wells exist in the B-aquifer at Parcel B and the HHRA evaluated risks for domestic use of groundwater based on the 12 most recent quarters of sampling data from those wells. The HHRA concluded that arsenic in groundwater at one well in the B-aquifer posed a potential unacceptable risk; however, that risk was caused by concentrations below the Hunters Point groundwater ambient level (HGAL) for arsenic. Therefore, the potential risk results from naturally occurring conditions in the B-aquifer. Any communication between the A and B aquifers is assumed to be negligible and B aquifer monitoring could be included in remedial design to confirm this.<br><br>• The groundwater evaluation for domestic use in the HHRA made a further conservative (protective) assumption to consider the possibility of groundwater from the A-aquifer being drawn downward into the B-aquifer by domestic wells screened in the B-aquifer at locations where the potential exists for the A- and B-aquifers to be in hydraulic communication. In these cases, data for groundwater from both aquifers were combined for the risk evaluation. This situation occurred in two locations at Parcel B and the HHRA concluded that potential unacceptable risk related to domestic use was posed, based on the A-aquifer data, in both cases. |

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| | | and in the area with the highest concentrations of Volatile Organic Compounds (VOCs) in the IR-25 Risk Plume.<br><br>Please revise the text and tables of Attachment A4 to address the potential for hydraulic communication at each of the groundwater plumes, or present aquifer pump test results to support the interpretation that none of the plumes are in communication with the B-aquifer at the following wells:<br><br>• IR-10A Plume: IR10MW32A, IR10MW33A, IR10MW59A, IR10MW61A, IR10MW62A, IR10MW69A, IR10MW71A, IR10MW75A and IR10MW76A;<br><br>• IR-10 B Plume: IR10MW12A and IR61MW05A;<br><br>• IR-25 Plume: IR06MW44A, IR25MW11A, IR25MW15A1, IR25MW15A2, IR25MW15F, IR25MW16A, IR25MW18A, IR25MW19A, IR25MW20A, IR25MW39A, IR25MW42B, IR25MW51A, IR25MW900B, IR25MW901B, IR25MW902B IR25MW903B, IR25MW904B, IR25MW905B. | • No other groundwater data exist for the B-aquifer at Parcel B. The only evaluation available for other areas (such as IR-10 or IR-25) where the A- and B-aquifers may be in communication would be an evaluation of the domestic use of groundwater based on the data collected solely from the A-aquifer. However, groundwater in the A-aquifer is recognized as not being of suitable quality for use as a drinking water source (see Water Board 2003 letter in Appendix G), so quantitative evaluation of its use for drinking water would be of limited value.<br><br>• Evaluation of groundwater from the A-aquifer for domestic use would likely indicate the same areas of potential unacceptable risk already presented for vapor intrusion on Figure 3-8. However, the uncertainty analysis in the HHRA (Section A9.0) will be expanded to discuss potential risks from domestic use of groundwater from the B-aquifer where it may be in communication with the A-aquifer, including IR-10 and IR-25. This discussion will include a quantitative estimate of the potential risks from domestic use of the A-aquifer in these areas. Potential risks will be estimated ratiometrically, using maximum chemical<br><br>• concentrations measured in the A-aquifer groundwater for the areas of potential communication at IR-10 and IR-25 and EPA (2004a) tap water preliminary remediation goals. Reference to this discussion will also be added to Section 3.1.4, Risk Summary for Groundwater.<br><br>• Quantitative data, such as aquifer pumping tests, are not available to evaluate the degree of hydraulic communication between the A- and B-aquifers. However, the HHRA in the TMSRA takes the conservative (protective) approach and calculates the risk as though communication exists in locations where the aquifers are adjacent. Collection of additional data to quantify the degree of communication would not alter the results of the risk evaluation. However, groundwater monitoring in the B-aquifer may be considered during the remedial design phase. |
| 4. | --- | Most of the figures of the TMSRA do not include Installation Restoration (IR) Site boundaries as requested by the Regulatory Agencies; therefore, previous investigations and remedial actions, historically categorized by IR Sites, cannot be easily compared to the data used for the Redevelopment Blocks. For example, the TMSRA has proposed Remedial Action Objectives (RAOs) and recommended selected remedies and for the Redevelopment Blocks, but these RAOs and remedies need to | • IR site boundaries at Parcel B are intricate and add significant complexity to any figure, especially figures showing the entire parcel. IR site boundaries will be added to Figures 3-11 through 3-25 that show individual redevelopment blocks and to Figure 2-7 showing general groundwater plume locations. However, adding IR site boundaries to other figures illustrating the entire parcel will seriously detract from the ability of those figures to convey the intended information. Figure 1-3 provides the locations of IR site boundaries at the same |

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| | | be compared with the RAOs and selected remedies that were agreed upon in the Parcel B Record of Decision (the ROD). Please include IR Site boundaries on all figures that depict the boundaries of Redevelopment Blocks. | scale as most of the other figures in the TMSRA. A clear overlay based on Figure 1-3 showing the IR site boundaries will be provided that readers can use to identify IR site boundaries on other figures displaying the entire parcel. |
| 5. | --- | The text of the TMSRA refers to ubiquitous metals in several places and states that arsenic, antimony, cadmium, copper, manganese, vanadium, and zinc are believed to be naturally occurring, but it is not appropriate to conclude that metals above the Hunters Point Ambient Levels (HPALs) are naturally occurring. The HPALs were developed to distinguish between ambient levels of metals which exist due to the origins of the fill material and concentrations of metals which appear to be due to site activities. Indeed, there is also disagreement as to whether any of the fill can be considered naturally occurring since it was placed in the Bay to increase the footprint of the Shipyard. Please revise the TMSRA to use terminology acceptable to the BCT [Base Realignment and Closure Cleanup Team]. | • The Navy does not agree with EPA's description of HPALs. Although HPALs are useful to help distinguish between naturally occurring and manmade concentrations of metals in soil, the HPAL values do not represent a discrete dividing line. Each HPAL was derived using statistical methods from a distribution of concentrations based on samples collected throughout HPS. The statistical methods used to evaluate the data were selected in close coordination with scientists from EPA and the California Department of Toxic Substances Control (DTSC). The concept of a statistical distribution describing a population of data is central to HPALs because the HPAL value is a single number that attempts to represent an entire population. In statistical terms, the HPAL is a 95$^{th}$ percentile upper confidence limit (95 UCL), so by definition, a portion of the naturally occurring data set will be above the HPAL. The natural distribution of metals concentrations at Parcel B will contain many values above the HPAL based simply on the heterogeneity of the native rock at HPS. When an HPAL is used as a ROD cleanup goal, it is a discrete criterion, but this is not based on the nature of the HPAL nor is it consistent with the method used to select HPALs.<br>• The Navy believes that the practice of using quarried local rock for fill at HPS is similar to construction practices in the same bedrock formations used elsewhere in San Francisco. The Navy observed that a wide range of concentrations of metals are found in similar chert, basalt, and serpentinite bedrock formations in other areas of San Francisco based on sampling that the Navy conducted in 2003 at areas outside of HPS. This information is summarized in a reported titled Metals Concentrations in Franciscan Bedrock Outcrops (Tetra Tech and ITSI 2004). This report will be attached as Appendix J to the draft final TMSRA and briefly summarized in the following paragraph that will be added to Section 2.1.2 (History of Investigations).<br>• **"Metals Concentrations in Franciscan Bedrock Outcrops Study.** The Navy studied the ambient concentrations of metals in bedrock and bedrock-derived soil from three nonindustrial sites in San Francisco. These three sites have a similar geologic setting to HPS and contain serpentinite or chert and basalt bedrock typical of the Franciscan Complex. The sites included two Franciscan Complex |

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| | | | subunits: the Hunters Point Shear Zone and the Marin Headlands Terrane. The investigation included about 30 rock and soil samples from each of the three sites (91 samples total) that were analyzed for metals using a standard analytical suite of EPA methods. The study found elevated concentrations of arsenic, iron, and manganese associated with chert bedrock and elevated nickel concentrations associated with serpentinite. The chemical composition of soil at the three sites was found to be similar to the chemical composition of rock. Of the 91 samples collected, none met the cleanup standards for unrestricted residential reuse at HPS. Appendix J contains the report from this investigation."<br><br>• The text proposed for addition to the executive summary and new Section 1.2 (see EPA general comment 1) will help clarify the Navy's position (see Attachment 1). In addition, the text in Section 2.3.1 (partial paragraph at the top of page 2-18) will be modified to include the following. "The same condition is true for a group of metals...and zinc. *The Navy acknowledges that industrial sources for metals exist and that there is a potential that some concentrations of metals could have sources other than naturally occurring rock. The Navy has worked to remove these sources during the remedial actions taken to date. However, the widespread distribution of metals remaining in soil is consistent with the concentrations present in native rock. Remedial alternatives in this TMSRA will be designed to be protective of risks from these metals concentrations, regardless of source.* Section 3.0 and..." |
| 6. | --- | The Technical Memorandum in Support of a Record of Decision Amendment (TMSRA) did not identify ARARs for radionuclides. In Section 2.1.2 of the TMSRA, the Navy states that "[t]he Navy continues to investigate and clean up radiologically impacted areas throughout the [Hunters Point Shipyard (HPS)], including some at Parcel B. . .. Potential remedial actions in the TMSRA that would involve excavation and disposal account for screening for radiological contamination in the areas identified as impacted." In Section 2.1.5.4 of the TMSRA, the Navy states that "[r]adiological issues will be addressed in a future radiological addendum to the TMSRA." Federal and state requirements and other guidance do exist that may constitute ARARs or TBC criteria for radionuclides. These requirements should be considered by the Navy prior to the implementation of response actions at HPS Parcel B. | • Federal and state requirements that may be considered as applicable or relevant and appropriate requirements (ARAR) will be identified and discussed in the radiological addendum to the TMSRA. Both the TMSRA and the radiological addendum will support the ROD amendment and all ARARs, including those pertaining to radionuclides, will be identified in the ROD amendment. No change to the report is proposed from this comment. |

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| 7. | --- | The TMSRA does not consider whether United States Department of Transportation and California Department of Transportation regulations are ARARs for off-site remedial actions. These federal requirements at 40 CFR Part 263 and state requirements would apply to the off-site transportation of hazardous materials. These transportation requirements are incorporated by reference into California's RCRA regulations at 22 CCR and the California Health and Safety Code, Sections 25167.1 through 25169.3. Please consider discussing whether these requirements are "applicable" or "relevant and appropriate" ARARs for remedial actions that involve the transporting of hazardous materials off-site. In addition, placement of soil on land would trigger federal restrictions closure requirements at 40 CFR 264.110 through 264.120 for units that store hazardous waste for more than 90 days. Please consider discussing whether these requirements are "applicable" or "relevant and appropriate" ARARs for remedial actions that involve transporting hazardous materials off-site. | • Section 121(e) of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA § 121[e]) states that ARARs apply to remedial actions conducted entirely on site. The off-site disposal of excavated soil or other waste generated in the performance of various alternatives is not an on-site remedial action. Therefore, the Navy has not identified any ARARs for off-site disposal; including requirements at Title 40 Code of Federal Regulations (40 CFR) Part 263 (requirements applicable to transporters), California Health and Safety Code §§ 25167.1 through 25169.3 (requirements applicable to hazardous waste haulers) and 40 CFR §§ 264.110 through 264.120 (requirements applicable to hazardous waste facilities). Should the Navy dispose of excavated soil or other waste generated in the performance of the various alternatives off site, the Navy will comply with all legally applicable transportation and disposal requirements. In addition, the Navy will use Resource Conservation and Recovery Act (RCRA)-licensed transporters and RCRA-licensed disposal facilities, both of which will be responsible for complying with the identified regulations.<br>• No change to the report is proposed from this comment. |
| 8. | --- | It is stated that based on updated site information, a Screening-Level Ecological Risk Assessment (SLERA) was conducted for Parcel B focusing on groundwater and sediment media. It is not clear from the text if a SLERA was conducted for soil media, or if past investigations and activities at the site (e.g., soil removal), were protective of ecological resources. Please revise the TMSRA to include this information and to verify that a SLERA is not necessary for soil media at Parcel B. | • The ROD (Section 2.6.2) concluded that Parcel B does not pose a risk to terrestrial receptors; Section 3.2 of the TMSRA reiterates this information. Consequently, a SLERA is not necessary for soil at Parcel B and none was conducted.<br>• No change to the report is proposed from this comment. |
| 9. | --- | It appears that risk-based concentrations (RBCs), based on the outcome of the SLERA, are provided in Table 3-20. However, no information is contained in the TMSRA to explain how these final values were derived. Please revise the document to clarify how the RBCs were derived. | • Risk-based concentrations were based on the methodologies used in the SLERA. Risk-based concentrations for copper, lead, zinc, total aroclors, total dichlorodiphenyltrichloroethane (DDT), and dieldrin, were based on the effects range-median (ER-M) values (Long and others 1995). The risk-based concentration for dibenz(a,h)anthracene was based on the San Francisco Bay ambient concentration (Water Board 1998). Risk-based concentrations for aluminum and methoxychlor were calculated using the same modeling methods and parameters presented in the SLERA. This calculation was performed by setting the hazard quotient (HQ) equal to 1.0 and then solving for the sediment concentration in the dose. This process is known as "back-calculating." Back-calculations were conducted using the high toxicity reference values to identify |

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| | | | risk-based concentrations for each receptor and chemical of ecological concern with a refined HQ based on the high toxicity reference value greater than 1.0. As a result, the risk-based concentration for methoxychlor was based on the willet, and the risk-based concentration for aluminum was based on the house mouse.<br>• The text of Section 3.3.3 (first paragraph on page 3-11) will be revised as follows. "Ecological risk-based concentrations were calculated...in the SLERA (Appendix B). *These methodologies include back calculation of concentrations using dose modeling, as well as comparison to ER-M values (Long and others 1995) and ambient concentrations (Water Board 1998).*" |
| 10. | --- | The TMSRA includes a discussion of risk characterization. However, this discussion does not provide information regarding the nature and extent of contamination as it relates to potential impacts regarding ecological receptors in Parcel B. That is, the TMSRA should include a complete discussion on the spatial distribution of hazard quotient exceedances for ecological receptors in Parcel B in order to establish the COPECs [chemicals of potential ecological concern] that are risk drivers. Please revise the TMSRA to include this information. | • The data set used for the SLERA includes sediment samples collected along all of the accessible areas of the shoreline at Parcel B. The SLERA considered this data set as a whole to identify COPECs and to estimate ecological risks. The SLERA concluded that the data presented in the TMSRA "...indicate that risk to benthic invertebrates, birds, and mammals from several metals and organic compounds in sediment and groundwater along the Parcel B shoreline cannot be ruled out. Specific chemicals in sediments that pose risk to one or more ecological receptors include: metals – aluminum, copper, lead, molybdenum and zinc; pesticides – dieldrin, methoxychlor, 4,4-DDT and total DDT; total Aroclors; and dibenz(a,h)anthracene. Mercury is the only chemical in groundwater that poses a risk to ecological receptors." The remediation alternative proposed for the shoreline (revetment) will be uniformly applied to the entire shoreline. Consequently, the remediation will be protective of ecological receptors, regardless of the distribution of HQ exceedances. Please refer to the response to EPA specific comment 59 for discussion of remediation alternatives for mercury. No change to the report is proposed from this comment. |
| 11. | --- | It is noted that a tidal marsh wetland is present in IR-07, and that this wetland will be removed due to recommended remediation alternatives. It is also stated that the removal of this wetland will be mitigated. No information is provided in the TMSRA to clarify how the loss of this wetland area will be compensated. Please revise the TMSRA to provide a complete discussion of the wetland area, and describe how the loss of the wetland area will be compensated. | • The text of Section 3.2 (last partial paragraph on page 3-8) will be modified as follows to reference the location of the detailed wetland information. "The shoreline of IR-07 consists of about 1.5 acres and includes approximately 1,300 square feet of tidal marsh wetlands. *A detailed description of the wetlands can be found in the Wetlands Delineation and Functions and Values Assessment report (Tetra Tech 2002b).* The shoreline..."<br>• The Navy will discharge fill material into the wetland at IR-07 in a manner consistent with Nationwide General Permit 38 (Cleanup of Hazardous and Toxic Waste) available under the Army Corps of Engineers Nationwide Permit program |

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| | | | at 33 CFR § 330. Nationwide Permit 38 is contained in 67 Fed. Reg. 2020, Appendix B. The Navy will comply with the substantive provisions of the Nationwide Permit 38, including general conditions contained in 67 Fed. Reg. 2020, Appendix C as a means of compliance with Section 404 of the Clean Water Act and its implementing regulations (33 U.S.C. § 1344, 40 CFR § 230.10 and 230.11, and 33 CFR § 323). These conditions include requirements to delineate the wetland, discharge suitable material, and mitigate the loss of the wetland by creating a new wetland that provides a functional replacement for the wetland loss. The Navy will mitigate the loss of the wetland using one of the following methods: compensatory mitigation, mitigation banking, or an in-lieu fee arrangement. The final details of the plan for wetland mitigation will be included in the remedial design.<br>• The text of Section 4.3.2.1 describing the containment general response action (first full paragraph on page 4-21) will be revised as follows. "The shoreline revetment would be constructed to protect the entire shoreline for the redevelopment blocks where the revetment is necessary. *The 1,300-ft² wetland at Redevelopment Block BOS-1 would be filled and the Navy would mitigate the loss of the wetland using either compensatory mitigation, mitigation banking, or an in-lieu fee arrangement.*" A similar change will be made to Section 5.1.1 describing Alternative S-2 (page 5-2). In addition, the text of Section 5.1.1 (end of second paragraph of Alternative S-2) will be revised as follows. "Further refinement of the details of the shoreline revetment, *including the plan for wetland mitigation*, will occur during the remedial design."<br>• Action-specific ARARs will be revised to reflect the substantive provisions of 33 CFR § 320 and 40 CFR § 230 as follows: 33 CFR § 320.4, 40 CFR §§ 230.10, 230.11, 230.20-230.25, 230.31, 230.32, 230.41, 230.41, and 230.53. |
| **Specific Comments** | | | |
| 1. | --- | Executive Summary, Table ES-1 Ranking of Remedial Alternatives for Soil and Groundwater: Soil alternative S-2 scores lower overall than soil alternative S-3; however, the scores for the two alternatives are equivalent except for cost. Soil alternative S-2 is lower in cost; therefore, it appears that soil alternative S-2 should score better overall than soil alternative S-3. Please revise the overall scores so that S-2 scores "very good" and S-3 scores "good" or clarify why S-3 is scored higher overall. | • Please refer to the response to EPA specific comment 70. |

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| 2. | ES-3 | Executive Summary, Parcel B History and Setting, Page ES-3: It is stated in this section that no threatened or endangered species are expected to occur in the area. However, no information is provided in the document to explain how this assumption was derived (e.g., site-specific surveys, communication with local, state, and federal agencies, database searches, among others). Please revise the TMSRA to provide this information. | • This statement is taken directly from the Parcel B feasibility study (FS) report (PRC 1996) and does not represent any new information. The TMSRA is intended to update new information and not to recharacterize all aspects of Parcel B. Site conditions at Parcel B related to endangered species have not changed since the remedial investigation (RI) and FS and there is no need for additional information. The reference will be added to this sentence in the executive summary. |
| 3. | 1-1 | Section 1.0, Introduction, Page 1-1: This section should include the date Hunters Point Shipyard (HPS) was placed on the National Priorities List (NPL). Please revise the introduction to include the date HPS was placed on the NPL. | • The text of Section 1.0 (second paragraph on page 1-1) will be modified as follows. "The Navy is cleaning up Parcel B at HPS under the IR program ... hazardous substances. *HPS was included on the National Priorities List in November 1989.*" |
| 4. | 1-3 | Section 1.3, Purpose and Organization of Report, Page 1-3: The text states that quarterly groundwater monitoring has been conducted for more than 4 years, but quarterly monitoring has actually been conducted for more than 6 years. Please make this change.<br><br>In addition, the discussion of groundwater contamination should include the 2005 data. Please revise the TMSRA to include a discussion of groundwater contamination in 2005. | • The text of Section 1.3 (third full paragraph on page 1-3) will be revised as follows. "The Navy removed more than 100,000 cubic yards...and conducted quarterly groundwater monitoring for more than *6* years." The inset box on page ES-4 of the executive summary describing remedial actions since the ROD (first bullet under groundwater) also will be updated to indicate 26, not 24, quarters of monitoring.<br><br>• Narrative descriptions of groundwater data in the TMSRA will be updated to account for samples collected through May 2006. For example, the mention of the mercury concentration at well IR26MW47A in Section 2.3.2 will be updated from the 0.7 micrograms per liter (µg/L) value for June 2005 to not detected at 0.34 µg/L for May 2006. However, the risk assessments and databases included in the TMSRA will not be updated for samples collected after November 2004. The Navy has reviewed the results of samples collected after November 2004 and has found no reason to expect that the new data would change the results of the risk assessments or the selection or evaluation of remediation alternatives. Presentations and evaluations of groundwater data collected after November 2004 are available in other reports for Parcel B. Section A9.0 discussing the uncertainties involved in the HHRA will be expanded to include a brief discussion of the qualitative evaluation of the data collected after November 2004 and the minimal effect on the risk assessment results. |

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| 5. | --- | Table 1-1, CERCLA Chronology for Parcel B: This table should include the second proposed plan or the title of the upcoming document that will take its place. Please include the second proposed plan or the document that will take its place. | • The row in Table 1-1 immediately below the row identifying the TMSRA indicates the next proposed plan for Parcel B. The title for the next proposed plan will be changed in Table 1-1 to *Proposed Plan in Support of a ROD Amendment.* |
| 6. | 2-5 & 2-6 | Section 2.1.3.2, History of Groundwater Actions, Page 2-5 and 2-6: It is not clear from the Hexavalent Chromium (Cr6+) Investigation Report (the Cr6+ Report, which is provided in Appendix H) that the extent of Cr6+ is limited to the immediate area around well IR10MW12A, since the study in the vicinity of IR10MW12A did not extend below 12 feet below ground surface (ft bgs). Please revise the third sentence of the discussion, to clarify that the extent of Cr6+ was not delineated below 12 ft bgs in the vicinity of IR10MW12A. | • This paragraph will be revised as follows. "The Navy installed 10 temporary monitoring wells in *the A-aquifer* in 2002 at locations down-, cross-, and up-gradient from well IR10MW12A to monitor concentrations of chromium VI in groundwater in the area of this well. These wells were installed...and evaluate site conditions. *Borings for these wells extended to 12 to 15 feet bgs and the wells characterized the full extent of the A-aquifer in the area around well IR10MW12A. In addition, borings for these wells found clay beneath the A-aquifer and the study concluded that downward migration of chromium VI was unlikely based on the low hydraulic conductivity of the clay, the large available surface area for adsorption, and the high potential for reduction of chromium VI to chromium III by organic material, iron, and manganese contained in the clay.* The study found the extent of chromium VI was limited to the A-aquifer in the immediate area around well IR10MW12A. Appendix H contains..." |
| 7. | 2-7 | Section 2.1.4, History of Treatability Studies, Page 2-7: This section refers to the pilot-scale SVE [soil vapor extraction] system at Building 123; however, it is not clear whether the system is still in place and operational. It is also unclear whether a rebound test is being done. Please revise the TMSRA to clarify whether the SVE system is still present at Building 123 and discuss whether a rebound test is part of this treatability study. | • The second paragraph describing the SVE study in Section 2.1.4 will be replaced with the following text.<br><br>"The Navy expanded the pilot-scale SVE system at Building 123 during January through May 2005 by installing 24 soil gas probes, nine SVE wells, and six vapor monitoring well pairs (ITSI 2006). The SVE system operated from June 15 through September 13, 2005 when the system was shut down for rebound monitoring. Monitoring for rebound continued through December 15, 2005. The SVE system operated again from January 3 to January 11, 2006 when operations ended."<br><br>"Vapor monitoring using a photoionization detector indicated that VOCs were reduced to below detection levels in 22 of 23 SVE wells and 27 of 28 vapor monitoring wells. VOC concentrations rebounded (to varying degrees) in 14 of the 23 SVE wells. The treatability study report recommended that the system be expanded to include additional vapor extraction wells and operated to remove additional VOCs. The system remains in place in the event it is utilized during future remedial action." |

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| 8. | 2-11 | Section 2.1.5.4, First Five-Year Review, Page 2-11: The text of the fourth bullet indicates that the portions of IR-10 that have not been excavated will have to be addressed if SVE is not selected as a remedy, but arsenic, beryllium and manganese will not be addressed by SVE. Since these metals are present in the area designated as Excavation 10-2, which was never opened, remediation may be necessary. Please revise the text of this bullet to clarify that SVE will not address metals contamination at IR-10 and state whether these metals will be addressed by the alternatives proposed in the TMSRA. | • The following text will be added to the fourth bullet. *"The TMSRA also contains remediation alternatives to address metals concentrations that exist in soil in the same area at IR-10; these metals would not be treated by the SVE system. Metals will be addressed by ensuring that the exposure pathway is broken by a cover consistent with the rest of Parcel B."* |
| 9. | 2-15 & 2-16 | Section 2.2.4.1, Hydrostratigraphic Units, Page 2-15 and 2-16: The description of the distribution of the B-Aquifer in Parcel B does not fully support the TMSRA, since some reviewers may not have access to the B-Aquifer Tech Memo. Figure 5 of the B-Aquifer Tech Memo would be a useful addition to the TMSRA to facilitate comparison of the distribution of the B-Aquifer and the extent of the Bay Mud Aquitard with the groundwater figures in the HHRA. Please include Figure 5 of the B-Aquifer Tech Memo in the TMSRA. | • The TMSRA is not intended to reproduce information that is available in existing reports. The reference provided in the text is sufficient to allow readers to locate the cited information. The Navy maintains an information repository at the main San Francisco library located at 100 Larkin Street. The units corresponding to the A- and B-aquifers will be identified in the legend of Figure 2-4. |
| 10. | | Placeholder, no comment 10. | • No response necessary. |
| 11. | 2-17 & 2-18 | Section 2.3.1, Overview of Soil, Pages 2-17 and 2-18 and Figure 2-6, Post-Excavation Arsenic Concentrations in Soil 0 to 10 Ft bgs: Although the text suggests that arsenic is naturally occurring, ATSDR [Agency for Toxic Substances and Disease Registry] states that arsenic was used as an antifouling additive to paint, so it is possible that areas with higher concentrations of arsenic were impacted by disposal of arsenic contaminated fill (i.e., IR 07) or by sandblasting and painting operations (i.e., in IR26, which is adjacent to Dry Dock 3). Therefore, concentrations of arsenic above the HPAL may be related to former shipyard activities and disposal operations. Since copper, mercury, and zinc were also antifouling additives, antimony was used in batteries, and cadmium was used in plating operations; these metals should not be described as naturally occurring when they occur at concentrations above the HPALs. Please revise the text in this section to discuss historic uses of these metals and delete text that refers to them as naturally occurring. | • Please refer to the response to EPA general comment 5.<br>• The arsenic concentrations in the highest range (30 to 240 milligrams per kilogram [mg/kg]) on Figure 2-6 all represent bottom composite samples collected post-excavation. The text of Section 2.3.1 will be revised as follows. "Although apparent clusters of higher arsenic concentrations appear in two locations (~~both of which were excavated during the remedial actions~~), most arsenic concentrations are distributed across Parcel B with no apparent pattern to indicate their presence due to a release. *Both locations on Figure 2-6 that indicate high arsenic concentrations (red symbols) represent bottom composite samples collected after excavations were completed.* This distribution of arsenic ..." |

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| | | In addition, there is a discrepancy between the text and Figure 2-6. The figure title indicates that post-excavation concentrations of arsenic are shown, but the last sentence on page 2-17 states that the two areas with clusters of elevated arsenic concentrations have been excavated. Please resolve this discrepancy. | |
| 12. | 2-18 & 2-19 | Section 2.3.2, Overview of Groundwater, Pages 2-18 and 2-19: There is no discussion of stratigraphic windows where hydraulic communication between the A and B Aquifers is likely to occur. According to Figure 5 of the Bay Mud tech memo, the A-Aquifer appears to be in contact with the B-Aquifer (i.e., the Bay Mud is absent) at the western end of IR-10 and adjacent to the Parcel C boundary in IR-06 and IR-25. Specifically, it appears that the two aquifers are in contact in the vicinity of the IR-10A, IR-10B and IR-25 Risk Plumes. The updated overview of groundwater should include a description of these stratigraphic windows, since this data was unknown when the ROD was written. Please revise Section 2.3.2 to include a discussion of the stratigraphic windows to the B-Aquifer beneath the IR-10A, IR-10B and IR-25 Risk Plumes and their significance for vertical contaminant migration. | • Section 2.2.4.1 discusses the updated knowledge of the distribution of the B-aquifer and the Bay Mud Deposits. The text of the third paragraph of Section 2.2.4.1 will be expanded as follows. "Bay Mud Deposits act as an aquitard…are adjacent. *Hydraulic communication is restricted, although not prevented, in areas where Bay Mud Deposits are present, and the potential for communication between the A- and B-aquifers is greater where the Bay Mud Deposits are absent. However, previous investigations (Tetra Tech 2001) concluded that, although lithologic data suggest the potential for communication, chemical results do not indicate communication exists. Groundwater elevation data for the western portion of IR-18 consistently indicate higher elevations in the B-aquifer than the A-aquifer, indicating the vertical groundwater flow gradient is directed upward from the B- to the A-aquifer in this area.*"<br>• Also please refer to the response to EPA general comment 3 for discussion of evaluation of potential communication in the HHRA. |
| 13. | 2-18 | Section 2.3.2, Overview of Groundwater, Page 2-18: It is unclear why the text states that there are two groundwater plumes in Parcel B, but then discusses three plumes. Since Cr6+ and mercury were each observed in a single well, the mercury detections in IR-26 should also be considered a groundwater plume. Further, mercury is soluble in groundwater and volatilizes easily when groundwater is exposed to air, this could account for some of the variability in mercury concentrations. Please revise the text to state that there are three groundwater plumes and include the mercury plume on a figure. | • The second paragraph of Section 2.3.2 will be replaced with the following text. "*COCs [chemicals of concern] in groundwater in the A-aquifer include (1) VOCs, especially trichloroethene and its breakdown products, (2) chromium VI, and (3) mercury. Some of these COCs are found in samples from multiple wells and represent plumes in groundwater. Other COCs are found in only individual wells and are not referred to as plumes. One plume of VOCs is found in a group of wells located at IR-10 and is termed the IR-10A risk plume in the HHRA (please refer to Appendix A, Attachment A4 for the definitions and methodology behind selection of risk plumes). This plume was the target of a ZVI [zero-valent iron] injection treatability study and has been monitored for many years by the RAMP [remedial action monitoring program]. Chromium VI has been detected consistently in samples from well IR10MW12A and has historically been termed a "plume" even though detections have been limited to a single well. The HHRA and the TMSRA maintain that convention and refer to the chromium VI concentrations at well IR10MW12A as the IR-10B plume. Figure 2-7 shows the* |

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| | | | *locations of VOCs and chromium VI at IR-10. Mercury has been detected consistently in samples from well IR26MW47A, but only in samples from that well and this TMSRA does not define this single well as a plume. The location of well IR26MW47A is shown on Figure 2-3 near the eastern edge of Parcel B. The remainder of this section discusses these COCs in greater detail in preparation for the HHRA discussion to follow in Section 3.0.*" |
| 14. | 2-18 | Section 2.3.2, Overview of Groundwater, Page 2-18: The third paragraph of this section should be updated, since VOC concentrations in IR10MW59A increased during 2005. Please revise the third paragraph to include VOC trends observed in 2005. | • The TMSRA is not intended to reproduce information that is available in existing reports. Trends in VOC concentrations at well IR10MW59A are discussed in quarterly monitoring reports for Parcel B; trends at well IR10MW59A do not affect the overall evaluation of groundwater for the IR-10 area.<br>• Text will be added to this paragraph as follows. "Figures 2-8, 2-9, and 2-10 illustrate the distributions of these three VOCs in groundwater near Building 123, *based on the November 2004 samples (Kleinfelder 2005). Samples collected in May 2006 indicated maximum concentrations of 27 µg/L trichloroethene, 78 µg/L cis-1,2-dichloroethene, and 39 µg/L vinyl chloride (CE2-Kleinfelder 2006c).*"<br>• Figures 2-8, 2-9, and 2-10 will not be revised. Also refer to the response to EPA specific comment 4. |
| 15. | 2-18 & 2-19 | Section 2.3.2, Overview of Groundwater, Pages 2-18 and 2-19: It is not clear why the only potential source of Cr6+ discussed in the text is a spill from the loading dock or ramp. Other potential sources of Cr6+ include releases from the acid drain line inside the building or from the storm drain sanitary sewer lines. Since it is likely that used chromic acid was discharged into the sewers or storm drains and that chromic acid that spilled on the floor was washed into floor drains, the storm drains and sanitary sewers should be considered possible sources of Cr6+. Please revise the text to discuss other possible sources of Cr6+.<br>In addition, the extent of $Cr^{6+}$ has not been determined because the investigation was limited to the area above 12 ft bgs. Please acknowledge this limitation in the text. | • The text of this paragraph (first partial paragraph on page 2-19) will be expanded as follows. "...area for building construction. *Other potential chromium VI sources include an acid drain line and associated tank, a concrete vault, and a brick unit all of which were inside Building 123 adjacent to well IR10MW12A (refer to Appendix H for more details).*"<br>• Please refer to the response to EPA specific comment 6 for discussion of limitations of the chromium VI investigation. |

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| 16. | 2-19 | Section 2.3.2, Overview of Groundwater, Page 2-19: It is not clear why the text states that the "current data for VOCs in groundwater at RU-C5 do not indicate that the plumes extend into Parcel B," since the soil gas and hydropunch study being conducted to delineate the extent of the RU-C5 plumes in the vicinity of the Parcel B/C boundary indicates that VOCs in soil gas have migrated across the boundary. Please update this discussion with all available information from the B/C boundary study. | • The text in Section 2.1.2 (first paragraph on page 2-4) will be expanded as follows to discuss the results of the B/C boundary investigation. "Field activities for this investigation were completed in March 2006 and a final investigation summary report *was submitted* in *November* 2006 *(CE2 2006). The investigation found (1) that dissolved-phase VOCs in groundwater in the shallow A-aquifer have migrated from Parcel C to Parcel B, but concentrations at Parcel B were below maximum contaminant levels (MCL), (2) that there was no indication of dense nonaqueous phase liquids (DNAPL) in the aquifer at Parcel B, and (3) that there was no evidence for migration of DNAPLs onto Parcel B from Parcel C.*"<br>• The text of Section 2.3.2 in the first full paragraph on page 2-19 will be revised as follows. "The extent of plumes at RU-C5~~-is under investigation~~, including whether the plumes extend into Parcel B, *was investigated between August 2005 and March 2006. The investigation found that concentrations of VOCs in this area were below MCLs.* Although..." |
| 17. | --- | Figure 2-1, Radiologically Impacted Areas and Buildings and Table 2-2, Radiologically Impacted Sites: According to Section 8.3.7.2 of the Final Historic Radiological Assessment (the HRA), all ships berths and piers are considered radiologically impacted, but this is not shown on Figure 2-1 or included in Table 2-1. Please indicate that all berths and piers in Parcel B are radiologically impacted on Figure 2-1 and in Table 2-1. | • Figure 2-1 will be modified to indicate that ship berths and piers are radiologically impacted. The following note will be added to Table 2-2. "Ship berths and piers at Parcel B are considered to be radiologically impacted." |
| 18. | --- | Figure 2-2, Excavation Location Map: It appears that some excavations are not shown on this map. For example, excavations 10-1 and 10-2 are not shown. Since the text mentions excavations that were not opened in IR-10, all IR-10 excavations should be shown on this map. Excavations that were not opened should be shown in a different color. | • The TMSRA does not discuss excavations that were never opened (at IR-10 or any other location at Parcel B). Data from samples collected from areas termed 10-1 and 10-2 were included in the HHRA, as were data from all the other excavations at Parcel B. The requested information is currently available on Figure 1-2 of the Construction Summary Report (Tetra Tech 2002a). No change to the report is proposed from this comment. |
| 19. | --- | Figure 2-4, Hydrogeological Conceptual Model: It is unclear why all three cross-sections are oriented roughly northeast-southwest. A cross-section that ties the three sections presented on this figure should also be prepared. Please consider providing a northwest-southeast oriented cross-section. | • Cross section orientations roughly parallel the sedimentary depositional direction as well as the direction of groundwater flow (from the upland, bedrock hills toward the bay). The selection and orientation of cross sections for the conceptual model were discussed during the TMSRA storyboard meeting with the BCT on August 18, 2004. The TMSRA was not intended to provide a complete reinterpretation of the subsurface geology at Parcel B, but to update the interpretation provided in the FS, as needed. An additional cross section is not necessary to support the selection and evaluation of remediation alternatives. |

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| | | In addition, for cross-section B-B' it is unclear why there is a break in the depiction of the Bay Mud and Undifferentiated Sedimentary deposits between borings IR10B003 and IR46B034, since there are no borings in this area. In addition, what information is there that fill directly overlies bedrock under Building 131, since no borings appear to have been completed in this area? Since it appears that information from other nearby borings was used, it would be helpful to include those borings in a different color/weight line on the lines of section. Please clarify how the cross-sections were created and specify whether data from other borings in the vicinity of the lines of section were used. If not, please explain why there is a break in the depiction of the Bay Mud and Undifferentiated Sedimentary deposits between borings IR10B003 and IR46B034 and explain why it was concluded that fill directly overlies bedrock under Building 131. In addition, please include all borings used to create these cross-sections on the figures, using a different color/weight line if necessary. Finally, please provide a plan-view map that includes all wells and borings completed in Parcel B.<br><br>For cross-section C-C', it is not clear that Excavation EE-05 was excavated to bedrock as shown on this cross-section, since soil confirmation samples were collected from the bottom of this excavation.. Please revise the cross-section in this area to show fill beneath this excavation or explain how it was concluded that EE-05 was excavated to bedrock. | • The gap in the Bay Mud between borings IR10B003 and IR46B034 reflects removal of the Bay Mud by dredging. This interpretation is consistent with that provided in the FS report (PRC 1996) and the Bay Mud and B-Aquifer Technical Memorandum (Tetra Tech 2001).<br><br>• The interpretation in the vicinity of Building 131 (should be Building 113) is based on boring PA42B004. It is possible that other stratigraphic units exist between the base of boring PA42B004 (11.5 feet bgs) and bedrock.<br><br>• Borings used to create the cross sections are indicated on the cross section. Wells and boring locations are included on the figures contained in Appendix F.<br><br>• Cross section C-C' will be modified to show artificial fill beneath Excavation EE-05. |
| 20. | --- | Table 2-3, RAMP Wells and Exceedances: There are several discrepancies between this table and analytical results for Q20 and Q21. Please resolve the following discrepancies:<br><br>• The following wells were not sampled during Q20, but Table 2-3 indicates that these wells were sampled: IR07MW23A, IR07MW27A, IR61MW05A and UT03MW11A;<br><br>• The following exceedances were not reported for Q20: Manganese at IR07MWS-4, Mercury at IR26MW47A, Vinyl chloride IR10MW61A, and Trichloroethene (TCE) and Vinyl chloride at IR10MW71A; | • The cited four wells will be shown as not sampled on Table 2-3.<br><br>• The cited exceedances will be indicated on Table 2-3, except well IR10MW71A. This well exceeded comparison criteria in Q21 for TCE and DCE, not TCE and vinyl chloride.<br><br>• Table 2-3 does not indicate any exceedances for well IR10MW62A. No change to the table is proposed from this comment.<br><br>• The cited exceedance for chromium VI at well IR10MW12A will be indicated on Table 2-3. |

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| | | • Vinyl Chloride and Cis-1,2-dichloroethene (DCE) were not detected in IR10MW62A.<br>• The exceedance of $Cr^{6+}$ at IR10MW12A during Q21 was not identified. | |
| 21. | 3-3 | Section 3.1.1, Exposure Scenarios and Pathways, Page 3-3: It is not clear why the mercury plume in IR 26 was not considered a groundwater risk plume. Since mercury dissolves in groundwater and volatilizes when groundwater is exposed to air, at a minimum, risks to construction workers and industrial workers should be calculated for this plume. Please revise the HHRA to include the IR-26 mercury plume as a groundwater risk plume. | • The HHRA will be revised to include an evaluation of risks from inhalation of mercury volatilized from groundwater for residential receptors (vapor intrusion exposure), industrial receptors (vapor intrusion exposure), and construction worker receptors (construction trench exposure). The extent to which mercury in groundwater may partition from a dissolved to a gaseous phase is uncertain; therefore, the plume- and nonplume-based exposure areas already established in the draft TMSRA will be used to evaluate risks from vapor inhalation of mercury. Plume-based exposure areas will not be re-delineated based on mercury.<br>• Inhalation exposure to mercury will be evaluated for each plume-based and nonplume-based exposure area where mercury is detected in groundwater. These exposure areas include industrial grid AY02 and residential grid B6006, which encompass monitoring well IR26MW47A at IR-26. The evaluation of risks from vapor intrusion of mercury for these grid locations will be presented in Attachment A3 of the HHRA, which contains groundwater risk results for each exposure scenario, regardless of the planned reuse. Note, however, that grids AY02 and B6006 are associated with Redevelopment Block BOS-3, for which the planned reuse designation is open space. Because the groundwater vapor intrusion exposure pathway is incomplete for the recreational exposure scenario, mercury in groundwater ultimately would not be identified as a COC for these grids, based on vapor intrusion exposure. Depending on the risk evaluation results for the construction worker scenario, mercury at this location could potentially be identified as a COC for the construction worker.<br>• The TMSRA evaluates excavating and removing additional soil beneath Excavation EE-05 to remove potentially remaining mercury source material. |

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| 22. | 3-5 | Section 3.1.3.1, Total Risk Evaluation, Page 3-5: It is not clear why the Construction Worker Scenario is not considered applicable for surface soil. Since the surface will be exposed during construction, risk from exposure to surface soil should be calculated for the construction worker. Please revise the HHRA to include an evaluation of risks to construction workers from surface soil and revise the table on page 3-5 to include the chemicals of concern for this scenario or state that the residential or industrial exposure routs will be used to address the construction worker exposure to surface soils. | • Based on discussion and an agreement with the BCT in March 2004, evaluation of construction worker exposure to soil in the HHRA included surface soil in the evaluation of COCs in soil from 0 to 10 feet bgs. A separate risk evaluation is not necessary. No change to the report is proposed from this comment. |
| 23. | 3-7 & 3-8 | Section 3.1.4, Risk Summary for Groundwater, Pages 3-7 and 3-8: The B-Aquifer is present at Parcel B in more areas than discussed in the text. For example, the discussion in Section 3.1.4 indicates that the B-Aquifer is predominantly absent in Parcel B except in the western portion of the parcel, but according to Figure 5 of the B-Aquifer Tech Memo, the B-Aquifer appears to be distributed over a larger area in the central portion of the Parcel B than it is in the western portion. Please revise the discussion of locations where the B-Aquifer exists to be consistent with the depiction of the B-Aquifer on Figure 5 of the B-Aquifer Tech Memo. | • Please refer to the responses to EPA general comment 3 and specific comment 12.<br>• The text of Section 3.1.4 in the first partial paragraph on page 3-8 will be revised as follows. "COCs for the B-aquifer…are summarized below. *Section A9.0 in Appendix A contains additional discussion of risks posed by potential communication between the A- and B-aquifers at Parcel B.*" |
| 24. | --- | Section 3.4, Updated Risk Evaluation by Redevelopment Block: Since the discussion of each section includes a statement about the risks related to groundwater, monitoring wells in each redevelopment block should be included on the figures. This would help clarify whether there is any groundwater information for the redevelopment blocks. Please revise Figures 3-11 through 3-25 to include all monitoring wells and indicate wells that are currently sampled under the Remedial Action Monitoring Program (RAMP) using a separate color or unique symbol. | • Locations of groundwater monitoring wells will be added to Figures 3-11 through 3-25; wells that are part of the RAMP will be identified. |
| 25. | 3-11 | Section 3.4.1, Redevelopment Block 1, Page 3-11: Appendix A does not contain any groundwater samples from wells adjacent to Redevelopment Block 1; therefore, it is not clear how human health risks from groundwater were evaluated for this area in the HHRA. For example, according to the second paragraph of this section, "Redevelopment Block 1 is identified for mixed use and was evaluated using a residential exposure scenario in the HHRA," and, "The HHRA did not find any unacceptable risks related to groundwater beneath Redevelopment Block 1." Please discuss how the exposure pathways for vapor intrusion and | • The text of Section 3.4.1 will be revised as follows. "The HHRA did not ~~find any unacceptable risks related to groundwater beneath~~ *evaluate groundwater at* Redevelopment Block 1 *because there are no groundwater monitoring wells located at this block. Previous investigations at Redevelopment Block 1 found no cause for installation of groundwater monitoring wells.*"<br>• If there is no reason to suspect VOCs in Redevelopment Block 1, then vapor intrusion is not a viable exposure pathway. Similarly, if groundwater contamination is not suspected at Redevelopment Block 1, the domestic use |

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| | | domestic use of the B-Aquifer were evaluated for Redevelopment Block 1, given that Appendix A does not contain groundwater data for this area. | pathway would not be viable. However, an institutional control is proposed to prohibit groundwater extraction for domestic use for all of Parcel B. This will facilitate implementation and enforcement prohibiting use of groundwater for domestic purposes. |
| 26. | 3-12 | Section 3.4.2, Redevelopment Block 2, Page 3-12 and Section 3.4.3, Redevelopment Block 3, Page 3-12: The RI Report states that IR-07 was also used for sandblasting and painting submarine superstructures and that additional waste oils may have been disposed in IR-07, but this is not reflected in the text of the TMSRA. Please revise the description of past activities at IR-07 to include this information. | • The text of Sections 3.4.2, 3.4.3, and 3.4.13 will be revised as follows. "Past activities at IR-07 that may have contributed to soil contamination include, *painting submarine superstructures*, disposal of sandblast waste, *disposal of additional waste oils*, and placement of construction debris as fill." |
| 27. | 3-13 | Section 3.4.5, Redevelopment Block 5, Page 3-13: This redevelopment block also includes most of IR-62, including the transformer shed at the northeast corner of Building 115, which was not investigated during the original RI, and Tank S-135, which was located northwest of Building 116, but IR-62 is not discussed in the text. Please revise the text to include a discussion of IR-62. Also, Building 115 does not appear to be labeled on Figure 3-15 or on other figures with building numbers. Please label Building 115 on Figure 3-15. | • The text of Section 3.4.5 will be revised as follows. "Redevelopment Block 5 includes parts of IR-23 *and IR-62* in the west-central portion of Parcel B. Past activities at IR-23 that may have been sources for contamination include surface spills of petroleum. *Past activities at IR-62 involved primarily fuel-related chemicals; a transformer substation at Building 115 may have also contained PCB [polychlorinated biphenyl]-bearing oil.* Redevelopment Block 5 includes Buildings *115 (offices and training),* 116 (submarine training school)...(submarine barracks). *Redevelopment Block 5 also included former Tanks S-135 and S-136. Former Tank S-135 was located northwest of Building 116; former Tank S-136 was located south of Lockwood Street south of Buildings 121 and 146. Tanks S-135 and S-136 were closed by the Water Board in 2002.*"<br>• Figure 3-15 and other figures in the TMSRA showing building numbers will be updated to label Building 115. |
| 28. | 3-14 | Section 3.4.5, Redevelopment Block 6, Page 3-14: IR-23 also included a photograph development laboratory, Building 146, but this use and the possible associated contamination are not discussed in the text. Please revise the text to include a more complete description of the past activities in this redevelopment block.<br>In addition, since it appears that there are no monitoring wells in Block 6, it is unclear how a conclusion about risks related to groundwater can be made. Please delete this conclusion or explain the basis for this conclusion. | • The text of Section 3.4.6 will be revised as follows. "Past activities at IR-23 that may have been sources for contamination include surface spills of petroleum *and use of photograph development chemicals at Building 146.*"<br>• Wells UT03MW16A, PA50MW01A, IR61MW04A, and IR61MW05A are located at Redevelopment Block 6. The HHRA used data from these wells to conclude there were no unacceptable risks. Locations of these monitoring wells will be added to Figure 3-16. No change to the text of the report is proposed from this comment. |

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| 29. | 3-14 | Section 3.4.7, Redevelopment Block 7, Page 3-14: It is unclear why the only sources of contamination included in the text for IR-42 are "surface spills of petroleum." Building 113 was used as a machine shop, for torpedo maintenance, as a shipyard analytical laboratory, and had an electrical substation. PCBs and metals are other likely contaminants, based on former site use. Please expand the description of contamination related to past activities at IR-42 to include metals and PCBs.<br><br>In addition, since it appears that there are no monitoring wells in Block 7, it is unclear how a conclusion about risks related to groundwater can be made. Please delete this conclusion or explain the basis for this conclusion. | • The text of Section 3.4.7 will be revised as follows. "Past activities at IR-42 that may have been sources for contamination include surface spills of petroleum, *chemicals associated with nondestructive testing, and PCB-bearing oil associated with electrical transformers."*<br><br>• Wells IR10MW15A and IR06MW46A are located at Redevelopment Block 7. The HHRA used data from these wells to conclude there were no unacceptable risks. Locations of these monitoring wells will be added to Figure 3-17. No change to the text of the report is proposed from this comment. |
| 30. | 3-14 & 3-15 | Section 3.4.8, Redevelopment Block 8, Pages 3-14 and 3-15: Other activities and uses that may have contributed contamination include the 9 transformers that were located in sumps in the southeast corner of Building 123, but the text does not include this information. Please include this former use and clarify if the transformers are still in place. | • The text of Section 3.4.8 will be revised as follows. "Past activities at IR-10 that may have been sources of contamination include releases of waste acids and plating solutions from floor drains inside Building 123, ~~and~~ leaks from acid drain lines and an industrial drain line, *and releases of PCB-bearing oil associated with transformers. The transformers are no longer in place at Building 123.*" |
| 31. | 3-14 & 3-15 | Section 3.4.8, Redevelopment Block 8, Pages 3-14 and 3-15; and Appendix A, Table A3-2, Groundwater Data Statistical Summary, IR-10B Plume, Aquifer: It appears that the HHRA may have underestimated the risk posed by Cr6+ in the IR-10B groundwater plume, since the concentration of Cr6+ at well IR10MW12A increased to 670 ug//L during Q24. Although the Cr6+ concentrations at IR10MW12A have historically exhibited a fluctuating trend, the Q24 result was the highest concentration measured since the RI Report was issued. Please revise Section 3.4.8 to discuss the increase in Cr6+ concentrations in 2005 to benchmark levels last seen during the RI. Please also revise Table A3-2 of Appendix A to identify the Q24 result for Cr6+ (670 ug/L) as the maximum concentration measured for this analyte. | • The text of Section 3.4.8 will be revised as follows. "The two most recent samples collected from well IR10MW12A detected chromium VI at *240* µg/L (collected in *March 2006*) *(CE2-Kleinfelder 2006b)* and *487* µg/L (collected in *May 2006*) *(CE2-Kleinfelder 2006c)*.<br><br>• Please note that aquatic organisms in the bay are not affected by fluctuations in chromium in groundwater at well IR10MW12A because it is over 400 feet from the bay. The risk assessment evaluation for the construction worker concluded that noncancer risk (hazard index) caused by chromium is about $4.38 \times 10^{-6}$. Also, there is no residential risk to chromium since there is no exposure pathway. Therefore, the risk posed by hexavalent chromium does not appear to have been underestimated in the HHRA.<br><br>• Please refer to the response to EPA specific comment 4 concerning the request to update the data set and discuss more recent trends in groundwater concentrations. |

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| 32. | 3-15 | Section 3.4.9, Redevelopment Block 9, Page 3-15: Based on the RI Report, there are other past activities that may have resulted in releases; these activities include oils, solvents, and corrosives from the machine shop in Building 128; and oils, paints, and solvents from Building 130. Please include this information in the text. | • The text of Section 3.4.9 will be revised as follows. "Past activities at IR-24 that may have been sources for contamination include surface spills of petroleum and releases of diesel fuel and lubrication oils along distribution pipelines (IR-46) that ran through IR-24, *and releases of oils, solvents, paints, and corrosives from Buildings 128 and 130.*"<br>• Samples were collected from areas of suspected releases during the RI and those samples not removed by subsequent investigations are included in the HHRA. |
| 33. | 3-15 & 3-16 | Section 3.4.10, Redevelopment Block 12, Pages 3-15 and 3-16: Other past activities that may have resulted in releases include the use and storage of oils, paints, and solvents in Building 130 (IR-24). In addition, the RI Report states that waste oils and chemicals were stored in the southwest portion of IR-20; this may have included areas outside Building 156. Please include this information in the text. | • The text of Section 3.4.10 will be revised as follows. "Past activities at IR-20 that may have contributed to contamination in soil include spills of waste oil and chemicals within *and outside of* Building 156. Past activities at IR-24 that may have been sources for contamination include surface spills of petroleum and releases of diesel fuel and lubrication oils along distribution pipelines (IR-46) that ran through IR-24, *and releases of oils, solvents, and paints from Building 130.*"<br>• Samples were collected from areas of suspected releases during the RI and those samples not removed by subsequent investigations are included in the HHRA. |
| 34. | 3-16 | Section 3.4.11, Redevelopment Block 15, Page 3-16: Other past activities in IR-26 that may have resulted in releases include welding and fabricating metal parts in Building 157; this operation may have resulted in releases of solvents and metals. In addition, Block 15 is close to Dry Dock 3, and open areas may have been used for sandblasting or have been impacted by sandblasting operations in the Dry Dock. Please include this information in the text. | • The text of Section 3.4.11 will be revised as follows. "Past activities at IR-26 that may have been sources for contamination include surface spills of petroleum, *welding and fabrication of metal parts, and sandblasting.*"<br>• Samples were collected from areas of suspected releases during the RI and those samples not removed by subsequent investigations are included in the HHRA. |
| 35. | 3-17 | Section 3.4.12, Redevelopment Block 16, Page 3-17: The text does not discuss possible activities or uses that resulted in the mercury contamination of IR-26. Since globules of mercury were found in this area; the discussion in the text should include activities/uses that may have resulted in the release of mercury. In addition, Block 16 is adjacent to Dry Dock 3, and open areas may have been used for sandblasting or have been impacted by sandblasting operations in the Dry Dock. This may explain the presence of arsenic in this area, since arsenic was used as an antifouling additive to paint. Please include this information in the | • The text of Section 3.4.12 will be revised as follows. "Past activities at IR-26 that may have contributed to contamination in soil include surface spills of petroleum, ~~and~~ releases of chemicals from the dock shipwright's shop, *and sandblasting.*"<br>• No historical uses of mercury were identified related to activities or buildings at Redevelopment Block 16. An email communication from consultants for EPA (TechLaw 2006) indicated that the presence of free mercury had been reported at a meeting of the Base Realignment and Closure Cleanup Team (BCT) sometime in the past. However, reports documenting the excavation activities at |

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| | | text. | Excavation EE-05 (IT 1997, Tetra Tech 2002a) do not report the presence of free mercury. Although mercury concentrations as high as 482 mg/kg were measured in samples collected at nearby Excavation EE-05, free mercury was not reported during excavation or sampling activities. Additional source control activities will be evaluated for mercury in the draft final TMSRA. |
| 36. | 3-17 & 3-18 | Section 3.4.13, Redevelopment Block BOS-1, Pages 3-17 and 3-18: Other uses of IR-07 that may have resulted in releases include sandblasting and painting submarine superstructures and disposal of waste oils. In addition, elevated levels of copper and zinc were found in the Fuel Line F excavation; the extent of these contaminants at 3 ft bgs has not been delineated. Please include this information in the text. | • Please refer to the response to EPA specific comment 26.<br>• Fuel Line F Figures A and B of the Construction Summary Report (Tetra Tech 2002a) illustrate the completed delineation for copper (Figure B) and zinc (Figure A) at the excavation for Fuel Line F. The HHRA considered detections of metals from all soil samples remaining in place at the excavation for Fuel Line F at Redevelopment Block BOS-1. Elevated metals concentrations are found throughout IR-07. It is assumed that some contaminated fill was placed at IR-07 to expand the land area of the parcel. This is one of the primary reasons the Navy proposes to amend the Parcel B ROD. No change to the report is proposed from this comment. |
| 37. | 3-18 | Section 3.4.14, Redevelopment Block BOS-2, Page 3-18: Other activities that may have resulted in releases from IR-24 include oils, solvents, and corrosives from the machine shop in Building 128; it appears that a portion of Building 128 is included in BOS-2. In addition, Block BOS-2 is adjacent to Dry Docks 5, 6, and 7, and open areas may have been used for sandblasting or have been impacted by sandblasting operations in Dry Docks 5, 6, and 7. Please include this information on the text. | • The text of Section 3.4.14 will be revised as follows. "Past activities at IR-24 that may have been sources for contamination include surface spills of petroleum and releases of diesel fuel and lubrication oils along distribution pipelines (IR-46) that ran through IR-24, *and releases of oils, solvents, paints, and corrosives from Building 128. Decontamination of ships from Operation Crossroads at Dry Docks 5, 6, and 7 may also have affected this redevelopment block (Radiological Affairs Support Office 2004).* Redevelopment Block BOS-2 includes Buildings 133 and 159 (both latrines) *and a small portion of Building 128.*" |
| 38. | 3-18 | Section 3.4.115, Redevelopment Block BOS-3, Page 3-18: The text does not discuss possible activities or uses that resulted in the mercury contamination of IR-26. Since free mercury was found in this area; the discussion in the text should include activities/uses that may have resulted in the release of mercury. In addition, portions of Block BOS-3 are adjacent to Dry Dock 3, and open areas may have been used for sandblasting or have been impacted by sandblasting operations in the Dry Dock. This may explain the presence of arsenic in this area, since arsenic was used as an antifouling additive to paint. Please include this information in the text. | • The text of Section 3.4.15 will be revised as follows. "Past activities at IR-26 that may have contributed to contamination in soil include surface spills of petroleum, ~~and~~ releases of chemicals from the dock shipwright's shop. *Decontamination of ships from Operation Crossroads at Dry Dock 3 may also have affected this redevelopment block (Radiological Affairs Support Office 2004).*"<br>• No historical uses of mercury were identified related to activities or buildings at Redevelopment Block BOS-3. Although mercury concentrations as high as 482 mg/kg were measured in samples collected at nearby Excavation EE-05, free mercury was not reported during excavation or sampling activities. Also refer to the response to EPA specific comment 35. |

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| 39. | 3-18 & 3-19 | Section 3.4.15, Redevelopment Block BOS-3, Page 3-18 and 3-19: There is a discrepancy between discussion of mercury detections in groundwater well IR26MW47A and the analytical results presented in the appendices. For example, in the second paragraph the Navy states, "Mercury was detected consistently in groundwater samples from well IR26MW47A at concentrations ranging from 1 ug/L to 2.8 ug/L from May 2003 through November 2004." However, according to Appendix F, mercury has been detected in every groundwater sample collected at this location, beginning in Q9. Please revise the discussion of Mercury detections at well IR26MW47A to be consistent with the analytical results in Appendix F. | • The text of Section 3.4.15 will be revised as follows. "Mercury was detected consistently in groundwater samples collected from well IR26MW47A (grid AY02) at concentrations ranging from *0.18* to 2.8 µg/L from *March 2002 when the well was installed* through November 2004." |
| 40. | --- | Figure 3-9, Groundwater Domestic Use Risks in B-Aquifer, Residential Exposure Scenario: It is not clear why the groundwater domestic use risks in the B-Aquifer were not based on planned reuse designations. For example, cancer risks greater than 1E-6 were identified for two residential grids based on the residential exposure scenario; however, the domestic use exposure pathways are considered incomplete in these exposure areas, since they have been designated for open space reuse. Please revise Figure 3-9 to depict groundwater domestic use risks in the B-Aquifer based on planned reuse. | • If groundwater in the B-aquifer is used as a drinking water source, it is likely that the radius of influence from a domestic well would extend beyond the boundaries of a 50-foot by 50-foot residential grid. For this reason, risks and COCs for domestic use of groundwater in the B-aquifer are not based on the specific planned reuse designations for Parcel B. This approach provides an additional measure of conservatism with respect to the protection of human health at HPS. No change to the report is proposed from this comment. |
| 41. | 4-2 | Sections 4.0 and 4.1.1, Remedial Action Objectives for Soil, Page 4-2: Section 4.0 refers to an RAO for sediments; please identify the sediment RAO. Section 4.1.1 of the TMSRA states that no ecological RAOs were developed for soil at Parcel B because the parcel contains no identified terrestrial habitat, but Section 4.1.1.2 indicates that an RAO was developed for soil and shoreline sediment at Parcel B to protect ecological receptors. These statements appear to be contradictory. Please revise the TMSRA to clarify that an ecological RAO was developed for soil and sediment in specific areas at Parcel B. | • The sediment RAO stated in Section 4.1.1.2 will be revised as follows. "Prevent exposure of ecological receptors to organic and inorganic compounds in soil and shoreline sediments *in shoreline areas* above remediation goals established for sediment."<br>• The first paragraph of Section 4.1.1 will be revised as follows: "Separate RAOs are typically developed for human health receptors and for ecological receptors. *Ecological RAOs were only developed for soil and sediment in shoreline areas.* No ecological RAOs were developed for *other* soil at Parcel B because most of the land is paved and the parcel contains no identified terrestrial habitat. ~~Therefore, RAOs for soil are developed based on human health receptors.~~" |

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| 42. | 4-6 | Section 4.2, Potential Applicable or Relevant and Appropriate Requirements (ARARs), Page 4-6: The quoted definitions provided in this section differ from those in the National [Oil and Hazardous Substances Pollution] Contingency Plan (NCP), 40 CFR Section 300.5; italics indicate where the definitions vary. The text states that "applicable requirements are those cleanup standards, standards of control, and other substantive *environmental protection requirements*, criteria, or limitations promulgated under federal or state law that specifically address *the situation at a CERCLA site*." The text defines "relevant and appropriate requirements" as "those cleanup standards, standards of control, and other substantive *environmental protection requirements, criteria, or limitations*, promulgated under *federal or state law* that, while not applicable, address problems or situations *similar to the circumstances of the proposed response action and are well suited to the conditions of the site*." Specifically, the National Contingency Plan (40 CFR Section 300.5) defines applicable requirements as "those cleanup standards, standards of control and other *substantive requirements*, criteria, or limitations promulgated under federal *environmental or state environmental or facility siting laws* that specifically address *a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site*...." The National Contingency Plan defines relevant and appropriate requirements as "those cleanup standards, standards of control, and other *substantive requirements*, criteria, or limitations promulgated under federal *environmental or state environmental or facility siting laws that, while not 'applicable' to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site*, address problems or situations *sufficiently similar to those encountered at the CERCLA site that their use is well-suited to the particular site*...." Please revise this section to quote the National Contingency Plan definitions. | • The text of Section 4.2 should not have stated that the definitions were quoted from the NCP. The text is based on EPA ARARs policy guidance and the NCP but slightly adapted to be more understandable to the general public.<br>• The text of the first paragraphs of Section 4.2 will be replaced as follows, and the discussion of the terms applicable or relevant and appropriate will be listed as simple text (that is, not indented or contained within quotation marks).<br>• "An ARAR may be either applicable or relevant and appropriate, but not both. ~~The NCP (40 CFR Part 300) defines applicable and relevant and appropriate as follows~~.<br>Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address the situation at a CERCLA site. The requirement is applicable if the jurisdictional prerequisites of the standard show a direct correspondence when objectively compared to the conditions at the site. An applicable federal requirement is an ARAR. An applicable state requirement is an ARAR only if it is more stringent than federal ARARs.<br>If the requirement is not legally applicable, then the requirement is evaluated to determine whether it is relevant and appropriate. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that, while not applicable, address problems or situations similar to the circumstances of the proposed response action and are well suited to the conditions of the site (EPA 1988). A requirement must be determined to be both relevant and appropriate in order to be considered an ARAR." |

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| 43. | 4-10 & 4-11 | Section 4.2.3.1, Potential Action-Specific ARARs for Soil Alternatives, Pages 4-10 and 4-11: In this section, the Navy first indicates that the ARARs for construction of the shoreline revetment and the covers for soil are listed in the subsection beginning on page 4-10 and then, in a later subsection, lists two ARARs specific to the construction of the shoreline revetment under a new subtitle. Please either remove the reference to the construction of the shoreline revetment from the subtitle on 4-10 and include all ARARs related to the construction of the shoreline revetment under the subtitle on page 4-11 or remove the "Construction of the Shoreline Revetment" subtitle from 4-11. | • In the first subsection, titled Constructing the Shoreline Revetment and Covers for the Soil, the Navy has identified requirements that are potential ARARs for both the construction of the shoreline revetment and the construction of the soil covers. In the second subsection, titled Construction of the Shoreline Revetment, the Navy has identified requirements that are potential additional ARARs only for the shoreline revetment. The RCRA temporary tank requirements and the Clean Water Act dredge and fill requirements are only potential ARARs for the construction of the shoreline revetment—not the soil covers.<br>• The title on page 4-11 will be revised to "Construction of a Shoreline Revetment *(Only)*," and the following sentence will be added before the bullet list for further clarification. *"The Navy has identified the following potential action-specific ARARs that apply only to the construction of the shoreline revetment:"* |
| 44. | 4-14 | Section 4.3.2, Development of General Response Actions, Page 4-14: General response actions (GRAs) are listed for soil and groundwater; however, it is not clear if the GRAs also apply to sediment. For clarity, please include GRAs for sediment, or indicate that the GRAs developed apply to soil and sediment. | • The first paragraph of Section 4.3 states: "...As in Section 4.2, options related to remediation of sediment and soil gas are discussed together with the other options for soil because of the similarity of the actions and technologies." No change to the report is proposed from this comment. |
| 45. | 4-19 | Section 4.3.2.1, Evaluation of Applicable Soil Process Options, Page 4-19: The TMSRA rejects excavation of shoreline sediments as a remedial process option due to the difficulties of excavating along the shoreline; however, the shoreline revetment option includes excavation of approximately 6,000 cubic yards of sediments. It is also necessary to remove existing rip-rap in order to construct the revetment. Please revise the TMSRA to clarify the difference between the excavation process option and the excavation required for the revetment that makes the excavation process option infeasible (location and depth of sediments requiring removal, for example). | • The excavation of IR-07 fill material, which includes or is adjacent to the shoreline sediment, was recommended for further evaluation in the five-year review report based on practical constraints in excavating all the fill material. However, installation of the revetment will require some excavation to establish appropriate grades and to allow placement of erosion control materials at appropriate elevations relative to sea level. The cost estimate for the revetment construction assumed 6,000 cubic yards as a conservative approach. The actual amount of sediment to be removed will be estimated during the remedial design.<br>• The text of the second paragraph on page 4-19 will be revised as follows: "...are added challenges to excavation along the shoreline. *In addition, the location and depth of the sediments as well as the location of contaminants within the sediments along the shoreline that may require remediation are not known in sufficient detail to remove them by excavation.* These added difficulties make excavation along the shoreline..." |

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| | | | • The text of the first full paragraph on page 4-21 will also be revised as follows to clarify the excavation that is proposed in conjunction with construction of the shoreline revetment.<br><br>"The shoreline revetment would be constructed to protect the entire shoreline for the redevelopment blocks where the revetment is necessary. *Installation of the revetment will require some excavation to establish appropriate grades and to allow placement of erosion control materials at appropriate elevations relative to sea level. However, this excavation is only incidental as part of the construction and would not be intended to focus on removal of contaminants.* Similar to soil covers, the revetment will need to be maintained..." |
| 46. | 4-23 | Section 4.3.2.2, Evaluation of Applicable Groundwater Process Options, Page 4-23: The text states that, "Passive groundwater treatment includes the process options of groundwater monitoring and natural recovery," but groundwater monitoring is not a treatment technology; this is acknowledged in the fourth sentence. Since groundwater monitoring is not treatment, it cannot be considered a passive treatment technology. Please resolve this discrepancy.<br><br>In addition, it appears that the process option is not "natural recovery," but "monitored natural recovery" or "monitored natural attenuation" (MNA), since groundwater monitoring is a necessary part of this process option. Please rename this process option to reflect the actual intent of the process. | • Section 4.3.2.2 will be revised to include "Groundwater Monitoring" as a GRA. The discussion of groundwater monitoring under the GRA of "Treatment" will be deleted from this section and placed under the heading of "Groundwater Monitoring." Tables 4-2 and 4-3 will be updated to reflect this change.<br><br>• A preliminary screening of MNA parameters was conducted in accordance with "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water" (EPA 1998a). Data were not sufficient to indicate ongoing natural biodegradation at Parcel B–key parameters did not have data available. However, the contaminants in groundwater will naturally attenuate via dispersion, dilution, and adsorption (and, potentially, biodegradation). Additionally, VOCs at IR-10 will continue to degrade in response to the ZVI treatability study (ERRG and URS 2004). These processes will be monitored as part of the groundwater monitoring option and the process option termed "Natural Recovery" will be removed.<br><br>• The following discussion of groundwater monitoring will be inserted on page 4-23 under a title of "Groundwater Monitoring" (immediately before the section titled "Treatment") and the existing section on passive treatment will be deleted.<br><br>• "*Groundwater monitoring is an effective process option for assessing changes in the concentrations of VOCs and mercury. Groundwater monitoring can detect potential increases in concentrations or migration of contaminants that could increase the risk of exposure of humans or aquatic life in the bay. Reductions in concentrations of VOCs have been observed over time at Parcel B, most likely as the result of treatability studies (such as ZVI injection). Groundwater monitoring* |

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| | | | *was a central component of the remedy for groundwater in the 1997 ROD. The monitoring option is easy to implement at relatively low cost. This option will be retained for development and evaluation of remedial alternatives.*"<br>• Similar changes will be made at other locations in the text to describe groundwater monitoring without discussion of natural recovery. |
| 47. | --- | Table 4-1, Screening of General Response Actions and Process Options for Soil and Table 4-3, Analysis of General Response Actions and Process Options for Soil and Groundwater: Fencing and barriers are not institutional controls (ICs) as indicated in these tables; these process options are considered engineering controls. Please include engineering controls as a process option and revise the text and tables accordingly. | • The discussion of fencing, barriers, and signs in Tables 4-1 and 4-3 will be listed as a separate row with a title of "Engineering Controls" in the Process Option column. |
| 48. | --- | Table 4-2, Screening of General Response Action and Process Options for Groundwater: Groundwater Monitoring is included in this table as a passive treatment technology; however, monitoring is not treatment. It appears that monitoring should be listed as a separate GRA. For clarity, please revise this table to list monitoring as a separate GRA, rather than a treatment technology type. | • Please refer to the response to EPA specific comment 46. |
| 49. | --- | Table 4-3, Analysis of General Response Actions and Process Options for Soil and Groundwater: The table indicates that ICs are effective at preventing exposure of receptors to contamination; however, ICs are not effective for ecological receptors. Please revise this table to clarify that ICs will not protect ecological receptors.<br>In addition, ICs are not generally sufficient to prevent human exposure in and of themselves; generally some type of engineering control like fences, barriers, and/or vegetation also are needed to prevent exposure. Please revise this table to clarify that ICs are not sufficient to prevent exposure, but a combination of ICs and engineering controls can prevent exposure. Also, please revise the descriptions of the alternatives to include both engineering controls and ICs. | • Table 4-3 will be revised as follows. "Effective at preventing exposure of *human* receptors to contamination, especially when used in combination with other options; *does not prevent exposure of ecological receptors;* does not reduce the volume or toxicity of contamination (EPA 2000b)."<br>• Institutional controls can be used to prevent domestic use of groundwater, which includes several exposure pathways. However, institutional controls must be used in conjunction with engineering controls to prevent other types of exposure (for example, ingestion or dermal adsorption from contaminated soil).<br>• The screening comments for institutional controls on Table 4-3 will be revised as follows. "Retained – easily implemented and effective; not sufficient to prevent exposure alone, but effective in combination with engineering controls." |

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| 50. | --- | Table 4-3, Analysis of General Response Actions and Process Options for Soil and Groundwater: This table lists excavation and methane source removal as separate technology types; however, they seem to be identical. It is not clear why methane source removal is listed as a separate technology type. To avoid potential confusion, please revise this table to remove methane source removal as a separate technology type, or clarify how it differs from the excavation option. | • Tables 4-1 and 4-3 will be revised to combine methane source removal and excavation. Methane source removal will be removed from the tables. The screening comment on Table 4-1 for excavation will be revised as follows. "Retained for organic compounds and lead, *and for excavation of soil where concentrations of methane or mercury above cleanup goals have been detected* – effective; ..." The description of excavation on Table 4-3 will be replaced with the following text. "*Excavation of contaminants or soil where concentrations of methane or mercury above cleanup goals have been detected using mechanical equipment.*" The screening comments for excavation on Table 4-3 will also be modified as follows. "Retained for organic compounds and lead; *retained for areas with methane concentrations in soil gas or mercury concentrations above cleanup goals*; effective; easily implemented; fast. Not retained for ubiquitous metals such as arsenic, iron, and manganese *or the heterogeneous fill areas of IR-07 and IR-18.*"<br><br>• Mercury source removal and methane source removal are important parts of the excavation portion of the soil remediation alternatives. Even though Tables 4-1 and 4-3 will be revised to refer simply to excavation, the names and descriptions of the remediation alternatives themselves will continue to include references to mercury and methane source removal to highlight the importance of those tasks. |
| 51. | --- | Table 4-3, Analysis of General Response Action and Process Options for Soil and Groundwater: Anaerobic bioremediation is evaluated as effective for reducing chlorinated VOCs; however, it is not clear if this technology will be effective on all contaminants in the IR-10A plume. Please revise the evaluation of anaerobic bioremediation to clarify whether is will be effective in reducing all VOCs, including vinyl chloride. | • Contaminants of concern in the IR-10 plume include chloroform, TCE, and vinyl chloride. According to EPA's document, "Engineered Approaches to In Situ Bioremediation of Chlorinated Solvents: Fundamentals and Field Applications" (EPA 2000a), TCE, chloroform, and vinyl chloride may be reduced through anaerobic biodegradation. This is shown on Exhibit 2-9 of the document. In addition, the anaerobic/aerobic in-situ bioremediation treatability study at Building 134 demonstrated that "The complete reductive pathway from PCE to ethene and ethane was observed. The data confirm that degradation at RU-C5 does not stall at cis-1,2-DCE or at VC, but results in the complete degradation to non-toxic ethene and ethane." (Shaw Environmental 2005).<br><br>• Both aerobic and anaerobic biodegradation were retained as process options on Table 4-3. For cost estimating purposes, it is assumed in the TMSRA that the biodegradation substrate is a glycerol polylactate (for anaerobic biodegradation). However, the substrate and methods of injection will be finalized in the remedial design. |

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| | | | • The effectiveness of anaerobic bioremediation will be changed on Table 4-3 to "Treatability study at Parcel C at HPS indicates anaerobic bioremediation is effective at reducing chlorinated VOCs, *including vinyl chloride.* Treatability study injected..." The screening comments will be revised as follows: "Retained, results from treatability study at Parcel C demonstrate effectiveness at reducing chlorinated VOCs, *including vinyl chloride*, relies on biodegradation, no adverse impact..." |
| 52. | 5-1 | Section 5.1, Development of Remedial Alternatives, Page 5-1: The first sentence in this section states that all process options retained after the initial screening and detailed analysis met the RAOs and satisfied ARARs; however, ICs and monitoring are retained process options that will not meet RAOs if implemented alone. Please delete this sentence and revise this section to clarify that remedial alternatives will be developed from process options to meet RAOs and satisfy ARARs. | • The first paragraph of Section 5.1 will be modified as follows. "*Process options were developed and screened as described in Section 4.0. The retained process options were combined into remedial alternatives to meet RAOs and to satisfy ARARs.* The remedial alternatives were derived using experience and engineering judgment to formulate process options into the most plausible site-specific remedial actions." |
| 53. | 5-1 | Section 5.1, Development of Remedial Alternatives, Page 5-1: The text states that the Navy's strategy is to remediate soils that cannot be removed by eliminating complete exposure pathways to the receptors, or to treat soils contaminated with VOCs using SVE; however, it is not clear how VOCs will be addressed in alternatives which do not include SVE. It appears that, in Alternatives S-2, S-3 and S-4, VOCs in soil under Building 123 are to be addressed with ICs. Please revise the TMSRA to clarify how VOCs in soil will be addressed in Alternatives S-2, S-3, and S-4. | • VOCs under Building 123 are COCs for future residents or construction workers. The risk pathways would be managed by Alternatives S-2, S-3, and S-4 through institutional controls. Use of Building 123 would be prohibited and future construction at this location would require engineering controls such as vapor barriers or vapor controls. The land-use control remedial design (LUC RD) or the risk management plan (RMP), or both, would require the development and approval of appropriate plans prior to use. The LUC RD would also prevent use of buildings over VOC plumes unless sufficient measures are taken to prevent exposure of residents to VOCs in soil or groundwater, possibly through the use of vapor barriers or other engineering controls.<br>• The first sentence in the second paragraph of Section 5.1 on page 5-1 will be revised as follows. "The Navy's strategy for soil remedial alternatives is to remove the contaminated soil from the site by excavation and disposal wherever practical, to *prevent exposure* to soils that cannot be *completely* removed by eliminating complete exposure pathways to the receptors, or to treat soils contaminated with VOCs using SVE."<br>• The description of Alternative S-2 in Section 5.1.1 will be revised as follows. "...posed by COCs in soil. *Institutional controls would require approved plans for construction activities that minimize risks to construction workers. Institutional controls will also prevent use of buildings over VOC plumes unless* |

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| | | | *sufficient measures are taken to prevent the exposure of residents to VOCs in soil or groundwater, possibly through the use of vapor barriers or other controls.* A LUC RD will be prepared..." |
| 54. | 5-2 & 5-3 | Section 5.1.1, Alternatives Developed for Soil, Pages 5-2 and 5-3: Since the source of methane is not known, it is possible that it may not be possible to remove it by excavation. For example, the organic material in the former Bay Sediments could be producing methane and it may be difficult to remove all of the Bay Sediments by excavation. To address this possibility, it is recommended that a contingency for venting be included in Alternatives S-3, S-4, and S-5. Please include a methane venting process option in the Section 4 tables and text and a contingency option to vent methane for Alternatives S-3, S-4, and S-5. | • Methane is believed to be the result of the placement of construction debris as fill based on historical excavation activities at IR-07 and IR-18 and the limited extent of methane. A process option for methane venting will be added to Alternatives S-3, S-4, and S-5 and to the Section 4 tables in the event that excavation of the methane source material is found to be infeasible based on site conditions (for example, if methane is produced from organic material in the native sediments instead of from identifiable construction debris). Inclusion of this option will eliminate the need for an explanation of significant differences or ROD amendment that would otherwise be required to implement that change. |
| 55. | 5-2 & 5-3 | Section 5.1.1, Alternatives Developed for Soil, Pages 5-2 and 5-3: The descriptions of Alternatives S-2, S-3, S-4, and S-5 do not appear to include the wetlands mitigation that will be necessary to restore the wetlands along the IR-07 shoreline that will be destroyed when the revetment wall is built. Please revise these alternatives to include wetlands mitigation. | • The description of Alternative S-2 in Section 5.1.1 will be revised as follows. "...impact on the bay during construction. *The small wetland at IR-07 will be destroyed by revetment construction. The Navy will mitigate this loss using either compensatory mitigation, mitigation banking, or an in-lieu fee arrangement."* Please also refer to the response to EPA general comment 11. A similar change will be made in Section 5.2.2.<br>• The estimated cost for wetland mitigation will be added to the cost estimates for Alternatives S-2 through S-5. The cost is anticipated to be less than $100,000. However, most experts agree that wetland mitigation at HPS should be consolidated in one area. The most attractive location is at Parcel E-2. |
| 56. | 5-2 | Section 5.1.1, Alternatives Developed for Soil, Page 5-2: ICs may not be sufficient to prevent exposure in Alternative S-2 because of the potential for contamination from blowing dust. At a minimum, this alternative should include vegetating areas with bare soil. Please revise Alternative S-2 to include vegetating areas of bare soil. | • Exposure to wind-blown dust is not a significant pathway for human health risk compared to dermal contact and ingestion. No change to the report is proposed from this comment. |

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| 57. | 5-4 | Section 5.1.2, Alternatives Developed for Groundwater, Page 5-4: This section refers to the zero valent iron (ZVI) injection treatability study and indicates that monitoring of the effectiveness of the treatability will be ongoing. However, the location and aerial extent of the treatability is not described or shown. Please revise the TMSRA to show where the ZVI treatability study was conducted and the area treated. | • The location of the ZVI treatability study will be added to Figures 2-8, 2-9, and 2-10. |
| 58. | --- | Section 5.2.4, Alternative S-4: Covers, Methane Source Removal, Institutional Controls, and Shoreline Revetment and Section 5.2.5, Alternative S-5: Excavation, Methane Source Removal, Disposal, Covers, SVE, Institutional Controls, and Shoreline Revetment: It is unclear how much of Parcel B will be covered with hardscape (e.g., asphalt, concrete, and buildings) and how much will have a soil cover. Please provide a figure depicting areas that will have soil cover and areas that will be covered with hardscape and specify in the text the percentage of the Parcel that will be hardscape. Please also specify the aerial extent that will be new covers of each type. | • The following paragraph will be added to Section 5.2.4, after the bulleted description of the covers. *"It is estimated from aerial photographs of Parcel B that approximately 8 acres will be covered with soil, 8 acres will be covered with new asphalt, 2 acres will be covered with maintained landscaping, and 28 acres of existing asphalt and concrete surfaces (including buildings) will be used and repaired, as necessary (see Figure 5-8). The estimates for each redevelopment block are listed in the cost tables in Appendix D. Actual extent of cover types will be identified in the remedial design."*<br>• The areas for soil or asphalt were estimated for cost estimating purposes. The remedial design will detail where soil, asphalt, or maintained landscaping is required to prevent exposure to COCs in soil. |
| 59. | --- | Section 5.3, Description of Groundwater Remedial Alternatives: None of the remedies address mercury in groundwater at IR-26. Since mercury is soluble in groundwater and the extent of the mercury plume is not known, at least two additional wells to determine the extent of the mercury plume will be necessary. In addition, a remedy to address mercury, perhaps by excavating additional soil should be proposed. Please include two monitoring wells to delineate the extent of mercury in groundwater and also include a source removal component in the alternative to reduce the concentration of mercury in groundwater. | • Alternatives GW-2 and GW-3 will be revised to include the addition of three new groundwater monitoring wells in the area near IR26MW47A to monitor the concentration of mercury in groundwater and the removal of mercury source material. Two groundwater monitoring wells (IR26MW49A and IR26MW50A) were installed in July 2006 near well IR26MW47A to monitor concentrations of mercury in groundwater. The third well will be installed within the area of Excavation EE-05, after the final remedy is selected and the mercury source removal is completed. These monitoring wells will be added to the Parcel B groundwater monitoring program.<br>• The following changes will be made to the TMSRA to include mercury source removal as part of the soil remediation alternatives:<br>• Section 4.2.3.1, the text of the first paragraph will be revised as follows. "...(1) no action; (2) institutional controls and shoreline revetment; (3)excavation, methane *and mercury* source removal, institutional controls, and shoreline revetment; (4) covering portions of the site with soil, concrete, or asphalt, methane *and mercury* source removal, institutional controls, and shoreline |

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| | | | revetment; (5) excavation, methane *and mercury* source removal, covers, SVE, institutional controls, and shoreline revetment."<br><br>• Table 4-1, the screening comment on Table 4-1 for excavation will be revised as follows. "Retained for organic compounds and lead, *and for excavation of soil where concentrations of methane or mercury above cleanup goals have been detected* – effective..."<br><br>• Table 4-3, the description of excavation on Table 4-3 will be replaced with the following text. "*Excavation of contaminants or soil where concentrations of methane or mercury above cleanup goals have been detected using mechanical equipment.*" The screening comments for excavation on Table 4-3 will also be modified as follows. "Retained for organic compounds and lead; *retained for areas with methane concentrations in soil gas or mercury concentrations above cleanup goals*; effective; easily implemented; fast. Not retained for ubiquitous metals such as arsenic, iron, and manganese..."<br><br>• The following text will be added to Section 4.3.2.1 (following the first full paragraph on page 4-19), under the heading of "***Removal***": "*Likewise, excavation is expected to be effective in removing mercury source material present beneath former Excavation EE-05. The maximum depth of mercury source removal will be to bedrock (expected at about 15 feet bgs) or to the maximum depth practicable. The horizontal extent of mercury in soil was delineated to the ROD cleanup goal for mercury (the HPAL) during the remedial action and this delineation will provide the horizontal extent for the mercury source removal. Excavation at depths significantly below the groundwater level would be difficult because of dewatering considerations and may not be feasible because of the immediate proximity of the bay. Cone penetrometer tests or soil borings may be required to locate the depth of the bedrock in this area; the remedial design will specify the depth of the excavation. The costs for the removal of mercury source material are expected to be moderate. This process option will be retained for development and evaluation of remedial alternatives.*"<br><br>• The text of the third paragraph of Section 5.1 (page 5-1) will be revised as follows. "Based on their location and extent (see Section 3.0), organic COCs (including the methane source), *mercury*, and lead in inland areas can be excavated..." |

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| | | | • The title of Alternative S-3 will be changed to "Excavation, Methane *and Mercury* Source Removal, Disposal, Institutional Controls, and Shoreline Revetment." This title will be changed in Sections 5.1.1, 5.2.3, Tables ES-1, 5-2, 6-1, and 6-2, and in the appendices. Similar changes will be made to the titles of Alternatives S-4 and S-5.<br>• Text in Section 5.1.1 describing Alternative S-3 on page 5-2 will be modified as follows. "Areas where organic compounds (including the methane source), *mercury*, and lead are COCs will be excavated to remediate these COCs to remediation goals."<br>• Text in Section 5.1.1 describing Alternative S-4 on page 5-3 will be modified as follows. "Alternative S-4 also contains the same methane *and mercury* source removal components that are described in Alternative S-3..."<br>• Text in Section 5.1.1 describing Alternative S-5 on page 5-3 will be modified as follows. "Alternative S-5 consists of a combination of soil excavation (included methane *and mercury* source removal) and off-site disposal..."<br>• Text in Section 5.1.2 describing Alternative GW-2 on page 5-4 will be modified as follows. "Additionally, groundwater monitoring will be used to confirm site conditions and ensure that, over time, the potential exposure pathways remain incomplete. *Two groundwater monitoring wells have been installed near well IR26MW47A to monitor concentrations of mercury in groundwater. The third well will be installed within the area of Excavation EE-05, after the final remedy is selected and the mercury source removal is completed.* Alternative GW-2 will also provide for continued monitoring ..."<br>• The list in Section 5.2.3 will be revised to add the following bullet. "*Soil from the mercury source area at former Excavation EE-05 would be excavated (see Figure 5-7). The vertical extent of the mercury concentrations that exceed the remediation goal will be delineated to identify the mercury source material (horizontal delineation can be estimated from the previous remedial action). The cost estimate in this TMSRA assumes that contaminated soil will be excavated from within the area of former Excavation EE-05 from 10 feet bgs to a depth of 15 feet bgs (the estimated depth of bedrock in the area) over an area of 60 feet by 250 feet (for an estimated volume of about 2,800 cubic yards).*" |

**TABLE 1: DRAFT RESPONSES TO COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | | • Text in the last paragraph of Section 5.2.4 on page 5-7 will be modified as follows. "Alternative S-4 also contains the same shoreline revetment (see discussion in Alternative S-2) and methane *and mercury* source removal (see discussion in Alternative S-3) components." A similar change will be made to the last paragraph of Section 5.2.5 on page 5-8.<br>• The first full paragraph of Section 5.3.2 on page 5-9 will be revised as follows. "...shows the locations of the proposed monitoring wells. *Two groundwater monitoring wells have been installed near well IR26MW47A to monitor concentrations of mercury in groundwater. The third well will be installed within the area of Excavation EE-05, after the final remedy is selected and the mercury source removal is completed.* Details of groundwater monitoring..."<br>• A new figure will be added to show the approximate location of the excavation for mercury source removal.<br>• Section 6.1.3 on page 6-7 will be revised as follows. "...Alternative S-3 consists of (1) excavation and disposal of contaminated soil *(including the mercury source)*, (2) excavation and disposal..."<br>• Section 6.1.3.1 on page 6-7 will be revised as follows. "Alternative S-3 provides protection to human health and the environment because it would remove soil contaminated with organic compounds (including excavation of the methane source area), lead, *and mercury* that presents unacceptable risk..."<br>• Section 6.1.3.3 on page 6-8 will be revised as follows. "Long-term effectiveness and permanence in areas where organic compounds, lead, *and mercury* would be excavated would be rated as excellent."<br>• The first full paragraph of Section 6.1.3.5 on page 6-9 will be revised as follows. "Construction efforts for the soil removal involve *five* ~~only four~~ areas to be excavated..."<br>• Section 6.1.3.8 on page 6-9 will be revised as follows. "...long-term exposure to organic compounds, lead, *and mercury* is reduced through excavation, and the shoreline revetment prevents exposure to contaminated sediment." |

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| | | | • Section 6.1.4 on page 6-10 will be revised as follows. "Alternative S-4 includes (1) covers over entire blocks where there is unacceptable incremental risk, (2) excavation and disposal of soil and debris in the methane *and mercury* source areas, (3) institutional controls..."<br>• Section 6.1.4.1 on page 6-10 will be revised as follows. "Similar to Alternative S-3, Alternative S-4 provides protection of human health and the environment because it would remove soil contaminated with organic compounds in the methane source area *and mercury in the mercury source area.*"<br>• Section 6.1.4.3 on page 6-10 will be revised as follows. "Similar to Alternative S-3, long-term effectiveness and permanence in addressing the methane *and mercury* source areas is rated as excellent."<br>• Section 6.1.5 on page 6-12 will be revised as follows. "Alternative S-5 would involve removal of soils with organic compounds, lead, *and mercury* that pose a potential unacceptable risk."<br>• Section 6.1.5.1 on page 6-13 will be revised as follows. "Alternative S-5 provides the best protection to human health and the environment compared with other alternatives for soil because soil contaminated with organic compounds (including the methane source area), lead, *and mercury* that poses potential unacceptable risk would be removed..."<br>• Section 6.1.5.3 on page 6-13 will be revised as follows. "Under Alternative S-5, soils with organic compounds, lead, *and mercury* that pose a potential unacceptable risk would be removed..."<br>• The fourth full paragraph of Section 6.1.5.5 on page 6-14 will be revised as follows. "~~However~~, soil removals would involve *five* ~~only four~~ areas and a moderate volume of soil."<br>• Section 6.1.5.8 on page 6-15 will be revised as follows. "Organic compounds are removed by excavation and disposal or are treated using SVE. *Mercury is removed by excavation.* Long-term protectiveness..." |

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| | | | • Section 6.2.3 on page 6-16 will be revised as follows. "Alternative S-3 provides long-term effectiveness and permanence for soil that contains organic compounds, lead, *and mercury* that is excavated, but relies on access restrictions for other COCs."<br><br>• The second full paragraph of Section 6.3.2 on page 6-19 will be revised as follows. "...adjust the requirements for data collection and analysis, and evaluate the need for other response actions. *Two groundwater monitoring wells have been installed near well IR26MW47A to monitor concentrations of mercury in groundwater. The third well will be installed within the area of Excavation EE-05, after the final remedy is selected and the mercury source removal is complete.*"<br><br>• Section 6.3.2.3 on page 6-20 will be revised as follows. "Under Alternative GW-2, risks posed by exposure to COCs in groundwater are mitigated by preventing the exposure pathway to potential human receptors. ~~Natural recovery is anticipated to be slow and may be more effective for VOCs than for mercury.~~ *The material in the aquifer matrix that is believed to be a continuing source of mercury in groundwater will be removed as part of the soil remediation alternatives. Groundwater monitoring will be used to evaluate the ongoing effectiveness of the mercury source removal as well as the groundwater treatments undertaken during treatability studies.* The adequacy and reliability of this alternative depend on (1) the maintenance and enforcement of access restrictions (including installation of vapor controls ~~barriers~~ in new buildings), (2) the reliability of the long-term monitoring program, and *(3) the completeness of the removal of the mercury source material from the aquifer.* The monitoring parameters ~~for natural recovery~~ would be established in the monitoring program including..."<br><br>• Section 6.3.3.3 on page 6-23 will be revised as follows. "...would be reduced through in situ treatment. *Mercury source material will be excavated and removed from the site as part of the soil remediation alternatives.* The adequacy and reliability of this alternative also depends *on the completeness of the removal of the mercury source material* and on maintenance and enforcement of the access restrictions. The overall rating..." Please see the response to EPA specific comment 63 for changes to the ratings of Alternatives GW-3A and GW-3B. |

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| | | | • The ratings for each alternative will be updated, as necessary, on Tables ES-1 and 6-2.<br>• The executive summary and appendices will be updated with similar text to incorporate the three new groundwater monitoring wells and the mercury source removal. |
| 60. | 5-8 | Section 5.3.2, Alternative GW-2: Long-Term Groundwater Monitoring and Institutional Controls, Page 5-8: The TMSRA states that the objectives for the groundwater monitoring program include monitoring the effects of previous treatability studies; however, the locations of previous treatability studies are not shown on a figure. In order to demonstrate that the monitoring well network will effectively monitor the effects of previous treatability studies, it would be helpful if the locations and extents of those studies were shown on Figure 5-6, Proposed Monitoring Well Location Map. Furthermore, there do not appear to be any monitoring wells near the individual well which exhibited potential risk from chromium VI. Please revise the monitoring well network to include a monitoring well or wells near IR10MW12A.<br>Both the Navy and EPA have guidance which is applicable to monitored natural attenuation (MNA). It would appear, based on the text in this section, that the document is referring to and proposing MNA. If so, there is specific guidance which must be addressed for this part of the remedy and this guidance presents requirements beyond mere monitoring. If the Navy is proposing MNA then it must be understood. Please reference the appropriate guidance and describe how those parameters, beyond monitoring, will be addressed. | • The locations of the ZVI and SVE treatability studies at Building 123 and the sequential anaerobic and aerobic bioremediation study at Building 134 will be added to Figure 5-6.<br>• Analysis for chromium VI will be added to wells IR10MW32A and PA50MW01A. Table 5-3 will be revised to add "Cr VI" as an analyte for both wells and the rationale will be changed to "Monitor possible migration of IR-10A VOC plume and IR-10B chromium VI plume."<br>• Please refer to the response to EPA specific comment 46 for the discussion of MNA, natural recovery, and groundwater monitoring. |
| 61. | 5-8 | Section 5.3.2, Alternative GW-2: Long-Term Groundwater Monitoring and Institutional Controls, Page 5-8: It is not clear how this alternative will address mercury at IR-26 and reduce the discharge of mercury to the Bay, since IR-26 is a shoreline site. For natural recovery/MNA to be applied, the source of mercury must be removed, but there is still mercury-contaminated soil at IR-26. Further, the mechanism for natural recovery when the contaminant of concern (COC) is mercury is unclear. If there is a precedent for natural recovery of mercury in a near-shore environment, the paper(s) should be provided to demonstrate that natural | • Two new groundwater monitoring wells have been installed, and one proposed well will be installed near well IR26MW47A to monitor the concentration and possible migration of mercury. In addition, Alternatives S-3, S-4, and S-5 will be modified to include removal of mercury source material. Also please refer to the response to EPA specific comment 59.<br>• Mercury is expected to attenuate through sorption to soil constituents, such as organic (humic) materials. Groundwater monitoring will track this process. Some precedents for selection of groundwater monitoring remedies at sites that |

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| | | recovery/MNA of mercury is a viable alternative. Otherwise, this alternative will not be protective of the environment or pass ARARs. Please provide the appropriate paper(s) that demonstrate(s) natural recovery/MNA of mercury in groundwater in a nearshore environment or revise this alternative to include a viable process option for addressing mercury in groundwater. | involve mercury as a contaminant can be accessed at the MNAToolbox website, operated by DOE (http://www.sandia.gov/eesector/gs/gc/na/mna_hg.html). Among other examples, this website summarizes the use of groundwater monitoring for mercury and other metals, in conjunction with other remedial actions such as excavation and capping, at the Wyckoff Company/Eagle Harbor Superfund Site in Puget Sound on Bainbridge Island, WA. This is consistent with the Navy's proposal for source removal and groundwater monitoring.<br>• Also, please refer to the response to DTSC (Lanphar) specific comment 58 for more discussion on the groundwater monitoring to evaluate mercury. |
| 62. | 5-10 | Section 5.3.3, Alternatives GW-3A and GW-3B: In Situ Treatment with Reduced Groundwater Monitoring , and Institutional Controls, Page 5-10: This section refers to a successful injection of ZVI as demonstrated during the pilot study at Parcel B; however, Table 4-3 indicates that injected ZVI followed preferential pathways and daylighted at the surface because of low-permeability soils during the pilot study. Please revise this section to discuss these implementability issues and how they might be addressed in this alternative. | • The "Cost and Performance Report, Zero-Valent Iron Injection Treatability Study, Building 123" (ERRG and URS 2004) states "Injection pressures were reduced to allow the maximum volume of iron to be injected without forming preferential pathways." The comment in Table 4-3 was intended to explain that the radius of influence is expected to be less than 10 feet because lower injection pressures would be required to minimize the potential for forming preferential pathways to storm drains or utility conduits. Therefore, more injection points would be necessary to inject the ZVI.<br>• The effectiveness of chemical reduction on Table 4-3 will be changed to: "Treatability study of ZVI injection at Parcel B resulted in substantial mass removal (ERRG and URS 2004), *and appears to be effective on vinyl chloride based on recent groundwater monitoring results.* Radius of influence *at Parcel B* was approximately 10 feet or less (ERRG and URS 2004) *because lower injection pressures were necessary to minimize preferential pathways and daylighting of the ZVI.* Proven technology."<br>• In monitoring well IR10MW61A, vinyl chloride has been reduced from a maximum of 240 µg/L in August 2004 to 39 µg/L in May 2006. |
| 63. | 5-10 | Section 5.3.3, Alternatives GW-3A and GW-3B: In Situ Treatment with Reduced Groundwater Monitoring, and Institutional Controls, Page 5-10: This section does not discuss the effectiveness of the biodegradation substrate or the ZVI treatment on all of the VOCs in groundwater at Parcel B. It is not clear if the proposed biodegradation substrate will be effective in reducing vinyl chloride concentrations, for example. Please revise this section to discuss the effectiveness of the proposed substrates | • The effectiveness of anaerobic biodegradation of VOCs, including vinyl chloride, is discussed in the response to EPA specific comment 51.<br>• Vinyl chloride was not detected during the ZVI treatability study at Building 123, but concentrations of TCE decreased 35 percent. The ZVI treatability study at Building 272, Parcel C, recorded a decrease in TCE of 98.3 percent and a decrease of chloroform of 93.9 percent (ITSI 2005). However, concentrations of |

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| | | on each of the COCs in groundwater at Parcel B. | vinyl chloride increased in one well, but decreased in two other wells and was not detected in three wells. Vinyl chloride concentrations at well IR10MW61A have been reduced from a maximum of 240 µg/L in August 2004 to 39 µg/L in May 2006.<br>• The analysis of Alternatives GW-3A and GW-3B in Section 6.3.3.3 on page 6-23 will be revised as follows. "The factors evaluated...and the adequacy and reliability of controls. *Treatability studies at HPS (ERRG and URS 2004, ITSI 2005) have demonstrated that in-situ bioremediation effectively reduces the concentration of VOCs in groundwater; ZVI is effective on vinyl chloride based on the results of groundwater monitoring at IR-10.* Under Alternatives GW-3A and GW-3B, short-term risks...and enforcement of the access restrictions. The overall rating *for Alternative GW-3A for long-term effectiveness and permanence is excellent, the overall rating for Alternative GW-3B is very good.*" The rating for GW-3B will be changed on Table 6-2 and ES-1 will be changed to "very good." The discussion on effectiveness of ZVI on Table 4-3 will be changed as shown in the response to EPA specific comment 62. Also, please refer to the response to EPA specific comment 59 for revisions to Section 6.3.3.3. |
| 64. | --- | Figure 5-6, Proposed Monitoring Well Location Map: This figure shows the area of highest VOC concentration and the extent of the "risk plume', but the extent of the existing VOC plume is not shown. In addition, the mercury plume in IR-26 is not shown. In order to demonstrate that the monitoring well network will be able to monitor changes in the extent of the plumes, please revise this figure to show the well locations with respect to the plume limits. | • The current VOC plume (shown on Figure 4-2) will be shown on Figure 5-6. The figure will also indicate the location of the mercury detection (well IR26MW47A) and the two newly installed wells (IR26MW49A and IR26MW50A). |
| 65. | 6-3 & C-32 | Section 6.1.1.2, Compliance with ARARs: Alternative S-1, Page 6-3 and Section C.4.1., Alternative S-1 – No Action, Page C-32: The text in Section 6 and Appendix C regarding whether the no action alternative complies with ARARs is inconsistent. Section 6.1.1.2 states that the "[b]ecause no action is proposed, this alternative does not comply with ARARs." The text in Section C4.1.1 indicates that "[t]here is no need to identify action-specific ARARs for the no action alternative because ARARs apply to 'any removal or remedial action conducted entirely on-site' and 'no action' is not a removal or remedial action.... Therefore, a discussion of compliance with action-specific ARARs is not appropriate for this alternative." Please revise all references to whether the No | • The text in Section 6.1.1.2 on page 6-3 will be replaced with the following text to be consistent with the text in Section C4.1.1. "*There is no need to identify ARARs for the no-action alternative because ARARs apply to 'any removal or remedial action conducted entirely on-site' and 'no action' is not a removal or remedial action. CERCLA § 121 (42 U.S.C. § 9621) cleanup standards for selection of a Superfund remedy, including the requirement to meet ARARs, are not triggered by the no-action alternative (EPA 1991). Therefore, a discussion of compliance with ARARs is not appropriate for this alternative.*"<br>• A similar change will be made to the text of Section 6.3.1.2 on page 6-18. |

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| | | Action alternative complies with ARARs in Section 6 and Appendix C to be consistent. | |
| 66. | 6-6 | Section 6.1.2.4, Reduction of Toxicity, Mobility, or Volume through Treatment: Alternative S-2, Page 6-6: The TMSRA rates Alternative S-2 "good" in terms of reduction of toxicity, mobility, or volume through treatment, but this alternative does not include treatment. Since this criterion is intended to evaluate alternatives in terms of USEPA's preference for treatment (i.e., destruction or transformation of contaminants) over containment or removal, an alternative which does not include treatment should not be rated "good" for this criterion. Please revise the TMSRA to rate Alternative S-2 "poor" in terms of reduction of toxicity, mobility, or volume through treatment. | • Section 6.1.2.4 on page 6-5 will be replaced with the following paragraph: "*Alternative S-2 includes institutional controls and shoreline revetment. This alternative does not include treatment that would result in the destruction, transformation, or irreversible reduction in contaminant mobility. Therefore, the overall rating for Alternative S-2 for the reduction of toxicity, mobility, and volume through treatment is poor.*"<br>• Tables ES-1 and 6-2 and Section 6.2 will be updated with the rating for Alternative S-2. The overall rating for the alternative will also be updated in the tables and the text of the report. |
| 67. | 6-8 | Section 6.1.3.4, Reduction of Toxicity, Mobility, or Volume through Treatment: Alternative S-3, Page 6-8: The TMSRA rates Alternative S-3 "very good" in terms of reduction of toxicity, mobility, or volume through treatment, but this alternative does not include treatment. Since this criterion is intended to evaluate alternatives in terms of USEPA's preference for treatment (i.e., destruction or transformation of contaminants) over containment or removal, an alternative which does not include treatment should not be rated "very good" for this criterion. Please revise the TMSRA to rate Alternative S-3 "poor" in terms of reduction of toxicity, mobility, or volume through treatment. | • Section 6.1.3.4 on page 6-8 will be replaced with the following paragraph: "*Alternative S-3 includes excavation of contaminated soil, methane and mercury source removal, shoreline revetment, and institutional controls. However, this alternative does not include treatment that would result in the destruction, transformation, or irreversible reduction in contaminant mobility. Therefore, the overall rating for Alternative S-3 for the reduction of toxicity, mobility and volume through treatment is poor.*"<br>• Tables ES-1 and 6-2 and Section 6.2 will be updated with the rating for Alternative S-3. The overall rating for the alternative will also be updated in the tables and the text of the report. |
| 68. | 6-11 | Section 6.1.4.4, Reduction of Toxicity, Mobility, or Volume through Treatment: Alternative S-4, Page 6-11: The TMSRA rate Alternative S-4 "good" in terms of reduction of toxicity, mobility, or volume through treatment, but this alternative does not include treatment. Since this criterion is intended to evaluate alternatives in terms of USEPA's preference for treatment (i.e., destruction or transformation of contaminants) over containment or removal, an alternative which does not include treatment should not be rated "good" for this criterion. Please revise the TMSRA to rate Alternative S-4 "poor" in terms of reduction of toxicity, mobility, or volume through treatment. | • Section 6.1.4.4 on page 6-11 will be replaced with the following paragraph: "*Alternative S-4 includes covers over contaminated soil, excavation, methane and mercury source removal, shoreline revetment, and institutional controls. However, this alternative does not include treatment that would result in the destruction, transformation, or irreversible reduction in contaminant mobility. Therefore, the overall rating for Alternative S-4 for the reduction of toxicity, mobility, and volume through treatment is poor.*<br>• Tables ES-1 and 6-2 and Section 6.2 will be updated with the rating for Alternative S-4. The overall rating for the alternative will also be updated in the tables and the text of the report. |

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| 69. | 6-14 | Section 6.1.5.5, Short-Term Effectiveness: Alternative S-5, Page 6-14: This section states that the time required to complete the remedial action is less than 1 year, and the effects of implementing this alternative would be nearly immediate; however, it is not clear whether this time frame includes completion of SVE. Please revise this section to discuss the anticipated duration of SVE. | • The estimate of 1 year to complete the remedial action includes 1 year of SVE operation and monitoring during that operation. This assumption is listed as item 10 in Section D6.4 of Appendix D. The following text will be added to the end of this item. *"The SVE operation period of 1 year includes the monitoring period associated with the system operation."* |
| 70. | 6-17 | Section 6.2.8, Overall Rating of Soil Alternatives, Page 6-17: The TMSRA concludes that Alternative S-3 is more protective than S-2, and it is rated higher than S-2 in Table 6-2; however, if all criteria are weighted equally, it appears that Alternatives S-2 and S-3 rank equally except for cost. Since S-3 is more expensive than S-2, it should actually rank lower than S-2. Please revise the TMSRA to assign an overall rank of "good" to S-3 and "very good" to S-2 to be consistent with the results of the evaluation by criteria. | • The overall rating for Alternative S-3 will be changed to "good" in Sections 6.1.3, 6.1.3.8, and 6.2.8. Likewise, the rating for Alternative S-3 in Tables ES-1 and 6-2 will be updated. |
| 71. | 6-20 | Section 6.3.2.1, Overall Protection of Human Health and the Environment: Alternative GW-2, Page 6-20: The TMSRA concludes that Alternative GW-2 would be protective of human health and the environment, but the potential risks from contaminated groundwater that migrates to San Francisco Bay remains unchanged. Please revise the TMSRA to clarify how Alternative GW-2 will be protective of the environment and meet RAOs given that the alternative will not prevent migration of contaminated groundwater to San Francisco Bay. | • Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. In addition, the beneficial impact of mercury source removal will be assessed by ongoing groundwater monitoring for mercury. Please refer to the response to EPA specific comment 61 and DTSC (Lanphar) specific comment 58. No other chemicals were considered to pose unacceptable risk based on migration of groundwater to the surface water of the bay. |
| 72. | 6-20 | Section 6.3.2.3, Long-Term Effectiveness and Permanence: Alternative GW-2, Page 6-20: It is unlikely that the concentration of mercury will decrease due to natural recovery or that groundwater containing mercury will be prevented from impacting the Bay. Apparent decreases in mercury concentration are likely due to sampling techniques and handling practices, since dissolved mercury will volatilize from groundwater when it is exposed to air. Please explain the mechanism for natural recovery of mercury or state that the mercury in groundwater at IR-26 will not be affected by natural recovery and reduce the rating of this alternative accordingly. | • Mercury source removal will be added to Alternative S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. In addition, the beneficial impact of mercury source removal will be assessed by ongoing groundwater monitoring for mercury. Please refer to the response to EPA specific comment 61 and DTSC (Lanphar) specific comment 58. |

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| 73. | 6-23 & 6-24 | Section 6.3.3.5, Short-Term Effectiveness; Alternatives GW-3A and 3B, Pages 6-23 and 6-24: It appears that short-term effectiveness is ranked too high because of the potential that toxic intermediate products like vinyl chloride will be produced. Please discuss the potential for production of toxic intermediates, explain how this will be addressed and revise the ranking for Alternatives GW-3A and 3B to account for the potential that toxic intermediates will be produced. | • Please refer to the responses to EPA specific comments 51 and 63. |
| 74. | 6-24 | Section 6.3.3.6, Implementability: Alternatives GW-3A and 3B, Page 6-24: According to the information presented in the TMSRA, preferential pathways, daylighting at the surface, and discharge to San Francisco Bay were problems when substrates were injected during treatability studies; however, these issues are not discussed in the evaluation of Alternatives GW-3A and 3B. Please revise the TMSRA to discuss implementability issues associated with injection of substrate at Parcel B and change the rating for implementability from "very good" as appropriate. | • Please refer to the response to EPA specific comment 62.<br>• Section 6.3.3.6 on page 6-24 states "The major difficulty with implementing injection technologies during pilot studies at HPS has been mass transfer of the treatment substrate to the contaminants. Data from pilot studies as well as the lithology of the treatment area would be used to select sufficient injection points for treatment additives to optimize the success of the injection."<br>• Although the results of the pilot studies suggest that the geology of the site makes it difficult to inject large amounts of ZVI or bioremediation substrates, the pilot studies have been successful in reducing the concentrations of contaminants in the treatment area. The remedial design will take into account the reduced injection pressures and radius of influence for these technologies at Parcel B. No changes to the report are proposed from this comment. |
| 75. | 6-26 | Section 6.4.4, Reduction of Toxicity, Mobility, or Volume through Treatment, Page 6-26: The fourth sentence states, "Neither Alternative GW-1 nor Alternative GW-2 would reduce the toxicity, mobility, or volume of contaminants in the groundwater, other than through natural recovery, but natural recovery cannot be assumed for the No Action alternative (GW-1) because there is no way to verify that it is occurring. Please revise the text to clearly state that Alternative GW-1 will not reduce toxicity, mobility or volume of contaminants through treatment. | • Section 6.4.4 on page 6-26 will be revised as follows. "Exposure to these contaminants…through institutional controls and groundwater monitoring. Neither Alternative GW-1 nor Alternative GW-2 would reduce the toxicity, mobility, or volume of contaminants in the groundwater *through treatment*~~, other than through the natural recovery of the aquifer~~. Alternative GW-2 would not reduce the toxicity or volume of contaminants, but would monitor the mobility…" |
| 76. | --- | Table 6-2, Ranking of Remedial Alternatives for Soil and Groundwater: The rankings in this table should be changed to correspond to any changes to rankings in the text. For example, the ranking for reduction of toxicity, mobility or volume through treatment should be changed to "poor" for Alternatives S-2, S-3, and S-4. Furthermore, Alternative S-3 should be ranked the same or lower than Alternative S-2 based on the | • Tables ES-1 and 6-2 and Sections 6.2 and 6.4 will be updated with the changes to the rankings from EPA specific comments 63, 66, 67, 68, and 70. |

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| | | evaluation by criteria. Please revise this table to be consistent with the text as appropriate. | |
| **General Comments, Appendix A, Parcel B Human Health Risk Assessment** | | | |
| 1. | --- | To the greatest extent practicable, the risk assessment should represent a stand-alone document. Every effort should be made to include relevant information within this section of a greater document. Though not substantive with respect to technical adequacy or potential to impact subsequent risk management decisions, the HHRA should contain a fundamental presentation of current and historical land use as a basis for evaluating efficacy of the Exposure Assessment. | • Section A1.0 will be revised to include a brief description of historical and current land use as follows.<br>• *"HPS operated as a commercial dry dock facility from about 1867 until 1940 when the Navy acquired title to the land and began developing it for various shipyard activities. From 1945 to 1974, the Navy used the shipyard primarily as a maintenance and repair facility. The Navy discontinued activities at HPS in 1974 and the shipyard remained relatively unused until 1976. In 1976, the Navy leased most of HPS, including all of the area now known as Parcel B, to the Triple A Machine Shop (Triple A). Triple A operated a commercial ship repair facility from July 1976 to June 1986, but did not vacate the property until March 1987. During the lease period, Triple A used dry docks, berths, machine shops, power plants, various offices, and warehouses to repair commercial and Navy vessels. Triple A also subleased portions of the property to various other businesses. The Navy resumed occupancy of HPS in 1986.*<br>• *Historically, the dominant land use of Parcel B has been for office and commercial buildings and light industrial production. The Navy also conducted industrial activities at Parcel B, such as fuel distribution, sandblasting, painting, machining, acid mixing, and metal fabrication. Most of Parcel B is covered with concrete or asphalt and buildings. The western portion of Parcel B, including Installation Restoration (IR) Program sites IR-07 and IR-18, is unimproved and covered only with soil and minor vegetation.*<br>• *Based on the City of San Francisco's reuse plan (San Francisco Redevelopment Agency 1997), Parcel B is expected to be zoned to accommodate mixed uses, including a mixed residential/retail area, a research and development area, a cultural and educational area, and open space. The mixed-use and research and development areas could include upper-story housing, live/work arrangements, and a variety of commercial enterprises, artist studios, retail and business services as well as residences on the ground level. The cultural and educational area could include museums. The open space areas will provide public access and use of the waterfront as well as provide a corridor for the Bay Trail (hiking* |

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| | | | *and bicycle access) close to the shoreline (San Francisco Redevelopment Agency 1997). The reuse planning was incorporated into the human health risk assessment (for example, areas where residential exposure applies) together with agreements with the BCT on the HHRA methodology to evaluate risks to human health at Parcel B."* |
| 2. | --- | It is not acceptable to eliminate non-detect results from the risk assessment data set. Section A5.1.2, EPCs for Groundwater (Page A-18), indicates that non-detect results were not included in the contaminant exposure point concentration (EPC) calculations for groundwater. USEPA's 1989 Risk Assessment Guidance for Superfund (RAGS), Part A (RAGS, Part A) recommends the use of one-half the sample quantization limit (SQL) as a proxy concentration for non-detect results. The Navy referenced an agreement with USEPA (Section A4.1) and DTSC with respect to an approved data set for use in assessing groundwater exposures, but USEPA did not agree that procedures in RAGS can be changed. In addition, since the full data set was provided, USEPA did not approve the data set; USEPA did agree that the approach discussed in meetings and conference calls could be applied and that we would review the resulting risk assessment. Significant uncertainty is associated with consideration of historical data (inclusion of the previous 12 rounds of groundwater sampling) for a dynamic medium such as groundwater (TechLaw notes Section A4.2, Data Reduction). It is likely that the exclusion of the non-detect/proxy values resulted in an underestimation of the total risk. Further, contrary to this approach, in Section A5.1.1, EPCs for Soil (page A-17), the text indicates that USEPA's recommendation to use non-detect proxy values in the calculation of EPCs for soil was applied. Please revise the risk assessment to follow RAGS, Part A guidance and include one-half of the SQL as proxy concentration for non-detect results. | • The groundwater data set for the HHRA was based on analytical results from the last 12 rounds of sampling at the request of the BCT. Use of 12 rounds of sampling introduces significant uncertainty to the EPCs for groundwater, because sampling methods for groundwater have varied over time, and, as noted in the comment, groundwater is a dynamic medium. The calculation of EPCs for groundwater was restricted to detected results to avoid adding additional uncertainty to the EPCs. This approach limits the influence of historical nondetected results, which may be influenced by earlier sampling techniques. The exclusion of nondetected results from the calculation of groundwater EPCs may result in a potential underestimation of risks if one-half of the sample quantitation limit (SQL) for one or more of the nondetected results is elevated and exceeds the detected results. The Navy acknowledges that the analytical results for some chemicals measured in groundwater at Parcel B contain nondetected results for which the one-half of the SQL exceeds the detected results. To address the potential underestimate of risks associated with limiting the data set used to calculate groundwater EPCs for plume-based exposure areas to detected results, the methodology used in the HHRA to identify chemical and exposure areas of concern for groundwater will be modified to incorporate the groundwater risk results calculated using maximum concentrations as EPCs (MAX scenario). Risk calculations based on the MAX scenario were provided in Attachment A3 of the HHRA for each plume-based exposure area. If results of the MAX scenario indicate additional COCs; that is, chemicals with a cancer risk greater than 1.0E-06 or noncancer hazard index greater than 1.0 that were not identified in the reasonable maximum exposure (RME) scenario, then those COCs from the MAX scenario will be included as COCs for Parcel B and evaluated for remedial alternatives. This approach provides an additional measure of conservatism beyond incorporation of nondetected results for calculation of EPCs because risks calculated using maximum concentrations as EPCs (MAX scenario) represent worst-case scenario results. The Navy discussed this approach with BCT risk assessment staff in a conference call on August 17, 2006. |

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| | | | • This change would only apply to the plume-based exposure areas for groundwater (IR-10A, IR-10B, and IR-25) because groundwater EPCs for nonplume exposure areas were already based on maximum detected concentrations (see Section A5.1.2 of the HHRA). |
| **Specific Comments, Appendix A, Parcel B Human Health Risk Assessment** | | | |
| 1. | A-8 | Appendix A, Section A4.1, Data Evaluation, Page A-8: The text indicates that USEPA has agreed to the data set used in the risk assessment, but USEPA only agreed that the approach discussed in meetings and conference calls could be applied and that the resulting risk assessment would be reviewed. Please revise the last sentence of the first paragraph to state that USEPA only agreed that the approach proposed for creating the data set could be applied and that the resulting risk assessment would be reviewed. | • The last sentence of the first paragraph in Section A4.1 will be revised as follows. "The data set for groundwater was based on *the approach for the groundwater risk evaluation for HPS, as discussed in meetings with EPA, DTSC, and the Navy in 2003 and 2004.*" |
| 2. | A-18 | Appendix A, Section 5.1.2, EPCs for Groundwater, Page A-18: This section indicates that the Lilliefors Test was used to determine the distributions for sample sizes greater than n=50. However, the first bullet point in Section A5.1.1, page A-17 indicates that the D'Agostino's Test was used for determining distributions in soil data set sample sizes greater than n=50. Please clarify why the Navy chose to use the Lilliefors Test in preference to the D'Agostino's Test for calculating EPCs in groundwater. | • The text in Section A5.1 will be revised to clarify that EPCs for soil, including the goodness-of-fit statistical tests used to determine soil data distributions, were calculated using previous guidance provided by EPA (1992) and the methodology established for soil HHRAs for HPS (Tetra Tech 2003a, Navy 2004). This methodology involves use of the D'Agostino test to determine distributions for data sets exceeding 50 samples. For calculation of EPCs for groundwater plumes, more recent EPA methodology was used; this methodology relies on use of the ProUCL software, which incorporates the Lilliefors test, rather than the D'Agostino test, to determine distributions for data sets exceeding 50 samples (EPA 2004b). |
| 3. | A4-3 | Attachment A4-Groundwater Plume Delineation Methodology, Page A4-3: The second bullet point on page A4-3 states that groundwater data from monitoring wells as well as piezometers were used to delineate plumes IR-10A, IR-10B, and IR-25. However, the text in Section A4.2 (Data Reduction, page A-9) indicates that only groundwater data from monitoring wells were included in the risk evaluation for the groundwater data set. This is due to the fact that groundwater data from piezometers are less reliable than groundwater data from monitoring wells. Although Figures A4-1 through A4-3 show that data collected from piezometers resulted exclusively in non-detect concentrations and were not used to | • For consistency with Section A4.2, the cited bullet text in Attachment A4 will be revised as follows.<br>• "*Only* groundwater data from monitoring wells were used to delineate risk plumes; *data from piezometers were not used for plume delineation.*" |

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| | | delineate any of the plumes, the text should be revised to clarify that piezometers were not used for plume delineation to maintain consistency with Section A4.2. Please resolve this discrepancy. | |
| 4. | --- | Table A-3, Chemical Data and Uptake Factors For Ingestion of Homegrown Produce: According to the footnote in Table A-3, the octanol-water partition coefficient (Kow) value for di-n-Butylphthalate of 4.0E+5 was found in USEPA's 1990 "Basics of Pump-and-Treat Groundwater Remediation Technology". However, the Kow for this compound is not presented in this source. The HHRA should clarify the source of this value. | • The EPA (1990) source cited in Table A-3 for the Kow for di-n-butylphthalate is correct. EPA lists a Kow of 4.0E+05 for di-n-butylphthalate on page A-7 of its "Basics of Pump-and-Treat Groundwater Remediation Technology" document (EPA 1990). |
| 5. | --- | Table A-11, Slope Factors for Chemicals of Potential Concern: This table indicates that the oral cancer slope factor (SF) for vinyl chloride (adult) is 7.5E-01. However, USEPA's Integrated Risk Information System (IRIS) recommends using an oral cancer slope factor of 7.2E-01. This may be a typographical error. Please clarify which value was used as the basis in any quantitative point estimate of risk. | • Although EPA's IRIS recommends use of an oral cancer slope factor (SFo) of 7.2E-01 per milligram per kilogram per day (mg/kg-day) for evaluating risks from adult exposure to vinyl chloride (based on the linearized multistage model [LMS]), EPA Region IX uses a SFo of 7.5E-01 per mg/kg-day (based on the lower limit on effective dose [LED] 10/linear method) to calculate the preliminary remediation goal (PRG) for vinyl chloride. A footnote will be added to Table A-11 to clarify that the SFo used for vinyl chloride (7.5E-01 per mg/kg-day) is based on the EPA Region IX PRG table (EPA 2004a). |
| 6. | --- | Table A-13, Groundwater Risk-Based Screening Levels: This table indicates that the tap water preliminary remediation goal (PRG) for arsenic is 7.0E-3 µg/L. However, USEPA Region 9's 2004 PRG Table lists a tap water PRG value of 7.1E-03 µg/L. This may be a typographical error. Please clarify which value was used as the basis in any quantitative point estimate of risk. | • Table A-13 will be revised to show the correct tap water PRG of 7.1E-03 µg/L for arsenic. The risk calculations for exposure to arsenic from domestic use of groundwater will be corrected accordingly to be based on the corrected PRG. |
| **General Comments , Appendix B, Parcel B Screening-Level Ecological Risk Assessment of the Parcel B Shoreline, Sites IR-07 and IR-26**<br>It should be noted that many of the following comments are provided to improve the TMSRA and do not represent major flaws in the risk assessment; such comments are designed to make the document clear and transparent to a new reader, as consistent with EPA policy, who may have not been party to prior risk assessment discussions between the Navy and the regulatory agencies. | | | |
| 1. | --- | The SLERA incorporates Step 3A, which is a refinement of chemicals of potential ecological concern (COPECs) based on less conservative assumptions. Part of Step 3A includes comparison of COPECs to background values. However, no information appears to be present in the document to discuss the appropriateness of the background data sets used | • The San Francisco Bay ambient sediment values were developed by the Water Board and have been widely accepted by the regulatory community. A complete discussion of the methodologies employed in developing these values is provided in the following two documents: |

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| | | for these comparisons (e.g., San Francisco Bay ambient sediment data). Although it is recognized that sufficient references are provided for the background datasets used for these comparisons, appropriate discussion should be provided in the document to detail the methodologies employed for collecting background data, locations from which background data were collected, and an overall assessment of whether collected data is actually representative of background conditions and applicable for the Step 3A process. Please revise Appendix B to include this information. | • Eco Analysis, Inc. 1998. "San Francisco Bay Sediment Criteria Project Ambient Analysis Report." Prepared for: California Regional Water Quality Control Board, San Francisco Bay Region. March.<br>• San Francisco Bay Regional Water Quality Control Board (Water Board). 1998. "Staff Report: Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments." May.<br>• The second bullet in Section B5.1.1 already contains the second reference and will be modified to include the first reference as follows.<br>• "San Francisco Bay ambient sediment data (Water Board 1998, *Eco Analysis 1998*) – EPCs for organic COPECs in sediment were..." |
| 2. | --- | Food chain dose modeling is included as part of the SLERA. However, the dose modeling input parameters applied to the various receptors of concern (ROCs) are not consistent, nor is the approach presented the most conservative, as recommended by USEPA's Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessments, EPA 540-R-97-006, June 1997. This guidance indicates that input parameters for dose modeling equations should represent the most appropriate conservative measures, such as the highest ingestion rate, lowest body weight, most contaminated food item, and the maximum detected concentrations in environmental media, among others. Please revise the SLERA to include these parameters in the dose modeling equations. | • The most appropriate conservative exposure parameters were used in the SLERA as input parameters for dose modeling.<br>• The maximum detected concentrations were used as the EPCs in the SLERA (Steps 1 and 2 of the ecological risk assessment process outlined in EPA guidance [1998b, 2001]). This assumes that receptors occur and feed exclusively at the location with the highest concentration; therefore, it is considered appropriately conservative for the SLERA. However, ecological receptors feed not only at the location with the maximum concentration but rather at multiple locations across the Parcel B shoreline. Therefore, in the refinement step of the BERA (Step 3a), the EPCs were revised from maximum concentrations to the 95 UCL to reflect more realistic exposure scenarios at the Parcel B shoreline, as recommended by both EPA (1998b, 2001) and Navy guidance (Navy 1999).<br>• The highest ingestion rate and lowest body weight were not considered appropriate exposure parameters because the equation used to estimate the ingestion rate is based on the body weight of the receptor (Nagy 2001). Therefore, the highest ingestion rate does not correspond to the lowest body weight. To evaluate risk to populations of ecological receptors at the Parcel B shoreline, ingestion rates based on mean body weights were considered appropriately conservative because the assessment endpoint is maintenance of the population as a whole. Evaluation of risk to populations of receptors is consistent |

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| | | | with EPA guidance.<br>• No change to the report is proposed from this comment. |
| **Specific Comments, Appendix B, Parcel B Screening-Level Ecological Risk Assessment of the Parcel B Shoreline, Sites IR-07 and IR-26** | | | |
| 1. | B-3 | Appendix B, Section B2.1, Conceptual Site Model, Page B-3: The conceptual site model includes a discussion of stressors, fate and transport, exposure pathways, and assessment and measurement endpoints. No clear discussions of sources of contamination are included in the SLERA. Please revise the SLERA to include this information. | • The sources of contaminants are discussed in Section 2.3 (Updated Characterization of Soil and Groundwater) of the main TMSRA text and are not repeated in the SLERA because the SLERA was not intended to be a stand-alone document.<br>• Section B2.1 on page B-3 will be revised as follows to direct the reader to Section 2.3 in the main TMSRA. "A conceptual site model for the Parcel B shoreline is presented on Figure B-3. *Sources of contamination are discussed in Section 2.3 (Updated Characterization of Soil and Groundwater) in the main TMSRA text.* The following sections review..." |
| 2. | B-7 | Appendix B, Section B2.2.1, Screening-Level and Refinement Evaluation for Sediment, Page B-7: Sediment samples were taken from 0 to 2 ft bgs, and 2.5 to 4 ft bgs, but justification is not provided for these sampling depth intervals. Diving waterfowl and most benthic invertebrates could conceivably be expected to come into contact with the upper 6 inches of sediment, so it seems more reasonable to separate sediment depth intervals into a 0 to 0.5 ft bgs and 0.5 to 2 ft bgs depth intervals, with the inclusion of the 2.5 to 4 ft bgs depth interval to address potential exposure of sediment due to erosions processes, as explained in the SLERA. Please revise the SLERA to include a detailed technical discussion to support the selection of the presented depth intervals, or discuss this issue in the Uncertainties Section. | • Selection of the depth intervals was evaluated and agreed during discussions with the regulatory agencies on the SLERA methodology. Section B5.2 will be expanded to include a discussion of uncertainties related to exposure to chemicals in the sediment intervals evaluated in the SLERA. The following text will be added to Section B5.2. "*Waterfowl and benthic invertebrates will be primarily exposed to the most surficial sediments. However, the shoreline at Parcel B is susceptible to erosional processes that could transport top sediments into the India Basin, exposing deeper sediments. Wind-driven waves and other disturbances of surface sediments could expose the deeper sediments, as well. The list of COPECs for benthic invertebrates is much the same for the surface and subsurface layers; there is no reason to expect that concentrations in the top 6 inches of sediment would differ greatly from the samples used in the SLERA.*" |
| 3. | B-18 | Appendix B, Section B4.1.4, Chemical Concentrations in Sediment and Tissue Samples, Page B-18: Based on information provided in the document, it appears that bioaccumulation factors (BAFs) calculated for terrestrial receptors at or near the site were used for investigating sediment media. This approach is inappropriate, due to the fact that location specific BAFs for terrestrial media are not representative of sediment media, in that location specific sediment chemical | • SLERAs, by definition, rely on information gathered from the literature, and rarely include much site-specific data beyond targeted abiotic samples. The Parcel B SLERA is more robust than is typical in that it benefits from extensive biological data collected on properties that are essentially identical in origin and natural environmental influence. The terrestrial and shoreline habitats of Parcels E and B are influenced both by the fill that was originally used to create the parcels, and by current interaction with the bay (which was also the original |

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| | | concentrations, sediment and water chemistry, and receptor specific uptake (among others) have not been taken into consideration. Please revise the SLERA to use media and site-specific derived sediment BAFs, or use appropriate literature derived sediment BAFs for investigating ecological exposures to contaminated sediments. | source of the underlying sediments). There is no reason to expect the physico-chemical parameters of the soil and sediment to differ substantially between Parcels E and B, and the Navy asserts that BAFs derived using data from Parcel E more closely approximate location-specific BAFs than do those taken from the literature that includes samples collected from around the world.<br>• No change to the report is proposed from this comment. |
| 4. | B-20 | Appendix B, Section B4.2.1, Surf Scoter Dose Parameters, Sediment Ingestion Rate ($IR_{sediment}$), Page B-20: Information is provided in this section on sediment ingestion rates for the surf scoter. It is unclear, based on information provided in the document, how a value of 0.00273 kg/day derived as the sediment ingestion rate for the surf scoter. Please clarify how this value was derived. | • The sediment ingestion rate for the surf scoter in the SLERA for the Parcel B shoreline was based on the sediment ingestion rate of the surf scoter in the Parcel F validation study. In the Parcel F validation study, the sediment ingestion rate was based on a field study which measured grit in the stomach contents of the closely related white-winged scoter (Melanitta fusca deglandi) at four locations in British Columbia (Vermeer and Bourne 1984). The sediment ingestion rate for the surf scoter in the Parcel F validation study was about 2.5 percent of the ingestion rate for prey. This sediment ingestion rate was conservatively rounded up to 3 percent of the prey ingestion rate (0.0909 kilogram per day) in the SLERA for the Parcel B shoreline. A sediment ingestion rate of 3 percent of the prey ingestion rate is similar to values estimated for diving ducks (Beyer and others 1994).<br>• The text describing the sediment ingestion rate on page B-20 will be revised as follows. "An incidental $IR_{sediment}$ for the scoter of 0.00273 kg/day was used in the exposure model. *The sediment ingestion rate represents 3 percent of the prey ingestion rate (0.0909 kg/day) and is based on similar sediment ingestion rates for diving ducks (Beyer and others 1994).*" |
| 5. | B-20 | Appendix B, Section B4.2.1, Surf Scoter Dose Parameters, Sediment Ingestion Rate ($IR_{sediment}$), Page B-20: It is stated that literature derived BAFs are used where site-specific sediment BAFs are unavailable. This approach is entirely unclear, as site-specific BAFs appear to be available. Please clarify this methodology. | • Site-specific BAFs were not available for all chemicals. Footnotes a, c, and g cite the references for the BAFs in Table B-9. Site-specific BAFs were unavailable and literature values were used for all chemicals footnoted with the letter "g" next to the values. Footnote g will be revised as follows to clearly explain that these BAFs are based on literature values.<br>• "g BAFs from EPA 1999 were used for these chemicals; *site-specific BAFs were not available for these chemicals.*" |
| **Appendix C, Applicable or Relevant and Appropriate Requirements** | | | |

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| 1. | --- | The evaluation of each potential Federal and State ARAR in Appendix C of the TMSRA does not always include a discussion of the specific requirements and how the requirements will affect response actions planned for Parcel B. Also, the text of Appendix C does not always identify whether each regulation is considered "applicable" or "relevant and appropriate." Please review and revise Appendix C to consistently state in both the text and tables whether each regulation is "applicable" or "relevant and appropriate" and explain why each regulation is considered an ARAR. | • The text and tables in Appendix C will be revised to identify whether each potential ARAR is applicable or relevant and appropriate and why each is an ARAR. |
| 2. | --- | Appendix C, Section C1.3, Other General Issues, General Approach to Requirements of the Federal Resource Conservation and Recovery Act. The Federal Register citation is incorrect. The text cites to 63 Fed. Reg. § 49118 [2001] for the statement that California received final authorization of its revised State Hazardous Waste Management Program by the USEPA on September 26, 2001. The correct citation for this statement is 66 Fed. Reg. § 49118 [2001]. Please edit the citation accordingly. | • The text of Section C1.3 will be corrected to indicate *66* Fed Reg. § 49118 [2001]. |
| 3. | C-9 | Appendix C, Section C1.4.1, RCRA Hazardous Waste Determination, Page C-9, 1st paragraph. The text incorrectly cites Cal. Code Regs. Tit. 22, Div. 3, Chapter 15 for other state waste requirements. The correct citation is Cal. Code Regs. Tit. 23, Div. 3, Chapter 15. Please revise this section to cite the correct Cal. Code Regs. requirement. | • The text of Section C1.4.1 will be corrected to indicate Cal. Code Regs. Tit. *23*, Div. 3, Chapter 15. |
| 4. | C-11 | Appendix C, Section C1.4.1, RCRA Hazardous Waste Determination, Page C-11, 4th full paragraph. The text does not explain why the Navy believes that the contaminants found at the site are not ignitable, corrosive or reactive. The text states that, "[b]ased on the Navy's knowledge of contamination at HPS Parcel B, the Navy has determined that the soil at HPS Parcel B is not ignitable, corrosive, or reactive, as defined in Cal. Code Regs. Tit. 22, § 66261.21-66261.23." Please include a discussion of why the contaminants found at the site do not constitute ignitable, corrosive or reactive waste. | • This statement is based on previous excavation and off-site disposal activities conducted under the ROD for Parcel B.<br>• The text of this paragraph will be revised as follows. "Based on the Navy's knowledge of *soil* contamination at HPS Parcel B *gained from sampling and analysis of the soil for off-site disposal under the remedial action selected in the ROD dated October 1997, the Navy does not anticipate that excavated soil or waste generated in the performance of various alternatives presented in the TMSRA will meet the definition of ignitable, corrosive, or reactive hazardous waste*, as defined in Cal. Code Regs. Tit. 22 § 66261.21 – 66261.23." |
| 5. | C-12 | Appendix C, Section C1.4.3, Other California Waste Classifications, Page C-12, 1st paragraph. The text incorrectly cites Cal. Code Regs. Tit. 22, §§ 20210, 20220 and 20230 as the state solid waste classification | • The text of Section C1.4.3 will be corrected to indicate Cal. Code Regs. Tit. *27*, §§ 20210, 20220 and 20230. |

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| | | requirements that should be evaluated. The correct citation is to Cal. Code Regs. Tit. 27, §§ 20210, 20220 and 20230. Please revise this section to cite the correct Cal. Code Regs. requirement. | |
| 6. | C-12 | Appendix C, Section C1.4.3, Other California Waste Classifications, Page C-12. This section does not discuss the requirement of Cal. Code Regs. Tit. 27 § 20230 even though the text identifies the requirement as a state solid waste classification requirement for evaluation. Please include a discussion of this requirement in this section and include the requirement in Table C-2, Page 5 where requirements 27 CCR § 20210 and § 20230 are identified. | • Appendix C correctly identifies the definition of inert waste at Cal. Code Regs. Tit. 27, § 20230. There are no requirements prescribed by Cal. Code Regs Tit 27, § 20230. Cal. Code Regs. Tit. 27, 20230(b) states that inert waste does not need to be discharged at classified units. Cal. Code Regs. Tit. 27, 20230(c) allows the option of prescribing individual or general water discharge requirements for the discharge of inert waste. In addition, the State of California did not identify Cal. Code Regs. Tit. 27, § 20230 as a potential ARAR.<br>• The text of Section C1.4.3 will be revised as follows. "The Navy will characterize any waste it generates for off-site disposal according to *Cal. Code Regs. Tit. 27, §§ 20210 and 20220*."<br>• Table C-2 will not be revised to add Cal. Code Regs. Tit. § 20230. |
| 7. | --- | Appendix C, Section C2.1.3, ARARs Conclusions for Soil. The requirements of 27 CCR § 20921 (a)(1) and (a)(2) are not discussed in this section. Please update section C2.1.3 to include this ARAR. Also, please update Table C-1 to include a discussion of this requirement. Please review Section 4 and Appendix C of the report to make sure that all of the Federal and State ARARs are identified in each section. | • The same text provided as the discussion of Cal. Code Regs. Tit. 27, § 20921(a)(1) and (2) present in Section C2.2.3.2 will be added to Section C2.1.3.<br>• This regulation is considered a state chemical-specific ARAR and is already included on Table C-2. Table C-1 will not be revised.<br>• Section 4 and Appendix C will be reviewed for consistency. |
| 8. | --- | Appendix C, Section C3.1.2, ARARs for Coastal Resources. This section does not include a citation to all relevant sections of the Coastal Zone Management Act that may be ARARs. Please update Section C3.1.2 of the report to include a reference that §§ 1451 through 1464 of the Coastal Zone Management Act and 15 CFR § 930 are also ARARs for coastal resources. | • The text of Section C3.1.2 will be revised as follows.<br>• The Navy has identified *the substantive provisions of* the following regulations as potential location-specific ARARs:<br>• Coastal Zone Management Act (16 U.S.C. § *1456c) and its accompanying implementing regulations in 15 CFR § 930*<br>• McAteer-Petris Act (California Government Code §§ 66600 through 66661) *which is the enabling legislation for the San Francisco Bay Conservation and Development Commission and the San Francisco Bay Plan* |

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| | | | • San Francisco Bay Plan (14 Cal. Code Regs. §§ 10110 through 11990) |
| 9. | --- | Appendix C, Section C4.0, Action-Specific ARARs, C4.1.2.2, State ARARS, Shoreline Revetment. The requirements of Cal. Code Regs. Tit. 17 § 93105 are not discussed in this section. Please edit Section C4.0 to include a discussion of why this requirement is considered an applicable ARAR for construction of the shoreline revetment and covers for the soil. Also, please review sections 4.2 and Appendix C to ensure that all sections consistently identify all federal and state ARARs for Parcel B. | • The discussions of action-specific ARARs in Section C4.0 are intended as summaries of the most significant requirements, except in those cases where the application of the requirement is complex and needs a more detailed explanation. Table C-6 contains a detailed explanation of the requirements contained in Cal. Code Regs. Tit. 17, § 93105. No change to the report is proposed from this comment. |
| 10. | --- | Appendix C, Section C4.2.2.2, Potential Action-Specific ARARs for Groundwater Alternatives, State ARARs and Table C-6. The requirements of 27 CCR § 20090(d) are not discussed in these sections. Please edit these two sections of the report to include a discussion regarding whether 27 CCR § 20090(d) is "applicable" or "relevant and appropriate" to groundwater monitoring actions that may be conducted at HPS Parcel B. | • The State of California identified Cal. Code Regs. Tit. 27, § 20090(d) as a potential state ARAR for soil only; the state did not identify it as a potential state ARAR for groundwater. Therefore, the Navy identified Cal. Code Regs. Tit. 27, § 20090(d) as a potential state ARAR on Table C-6 for constructing the shoreline revetment and soil covers. In addition, the Navy has determined that, with the exception of Cal. Code Regs. Tit. 27, § 20430(g)(2), the potential state groundwater monitoring ARARs are not more stringent than the potential federal groundwater monitoring ARARs at Cal. Code Regs. Tit. 22. No change to the report is proposed from this comment. |
| 11. | --- | Appendix C, Appendix C, Tables. This section does not identify 22 CCR §§ 66268.40, 66268.48, 66268.49 and 66268.44 as potential ARARs even though these requirements are identified in Section C2.2.3.1 as potential federal ARARs for soil response actions. Please include a discussion of these requirements in the relevant table of Appendix C. | • The Navy did not identify Cal. Code Regs. Tit. 22 §§ 66268.40, 66268.44, 66268.48, and 66268.49 as potential chemical-specific ARARs for Parcel B because the Navy does not anticipate having to treat the soil to meet these land disposal restriction (LDR) standards prior to off-site disposal. The off-site disposal facility will be responsible for ensuring any required compliance with RCRA LDRs. This discussion will be removed from the text in Section C2.2.3.1 and added to Table C-1 with an ARAR determination of "not applicable."<br>• Temporary stockpiling requirements at 40 CFR § 264.554 (a), (d), (g), (h), (i), (j), and (k) are included as action-specific ARARs for alternatives that include excavation (refer to Section C4.1.3.1 and Table C-5). |
| 12. | --- | Appendix C, Table C-1, Potential Federal Chemical-Specific Applicable or Relevant and Appropriate Requirements, Page 2 of 2, Toxic Substances Control Act. 40 CFR § 761.61c ) may be an applicable ARAR rather than a relevant and appropriate ARAR since the Navy may have used and/or disposed of PCBs and PCB contamination exists at the site. Please either revise the Preliminary ARAR Determination field to | • The Navy will include 40 CFR § 761.61(c) as an applicable requirement because the Toxic Substances Control Act (TSCA) regulates PCB remediation waste at as-found concentrations of greater than or equal to 50 parts per million (ppm) (40 CFR § 761.50(b)(3)). The Navy has measured a concentration of PCBs of 50 ppm in soil that remains in place (at IR-07) at Parcel B. |

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| | | identify this regulation as an applicable ARAR and revise the comments field to clearly state why the regulation is applicable or edit the comments field to state why the requirement is only relevant and appropriate to response actions planned at the site. | • The comment column will be revised to include the following. *"This requirement is applicable to soil contaminated with PCBs at levels greater than or equal to 50 ppm. A measured concentration of 50 mg/kg has been documented near the shoreline at IR-07."* |
| 13. | --- | Appendix C, Table C-2, Potential State Chemical-Specific Applicable or Relevant and Appropriate Requirements: This section includes descriptions of requirements that are not ARARs. The purpose of the ARARs tables is to provide a simple overview of the requirements that are considered ARARs. Therefore, it is not necessary to include requirements that are not ARARs in the tables. Please review the tables and consider deleting the requirements that are not ARARs. If these requirements are removed from the tables, please consider identifying these requirements and the rationale for why they are not ARARs in the relevant text sections of the TMSRA. | • The table is intended to summarize and document the analysis of ARARs, including requirements that are reviewed to evaluate whether or not they qualify as ARARs but are determined not to qualify. This presentation will support a more complete record of the Navy's ARAR decision-making process. The entries in Table C-2 provide a quick synopsis in addition to the longer discussion already presented within the text of Appendix C. No change to the report is proposed from this comment. |
| 14. | --- | Appendix C, Table C-3, Potential Federal Location-Specific Applicable or Relevant and Appropriate Requirements. Section 404 of the Clean Water Act is likely an applicable ARAR rather than a relevant and appropriate ARAR. Section 404 of the Clean Water Act is identified as a relevant and appropriate ARAR for the construction of the shoreline revetment within a wetland area of the site. It is possible that this wetland meets the definition of a wetland in section 404 of the Clean Water Act and that the construction of the shoreline revetment will result in the filling of this wetland, which could be a violation of section 404. Please either revise the Preliminary ARAR Determination field to identify this regulation as an applicable ARAR and revise the comments field to clearly state why the regulation is applicable or edit the comments field to state why the requirement is only relevant and appropriate to the shoreline revetment response action. | • The preliminary ARAR determination for Section 404 of the Clean Water Act will be changed from relevant and appropriate to applicable. The wetland is inundated by the bay during high tides; therefore, the Navy has concluded that the wetland is sufficiently connected to the bay to be considered regulated under the Clean Water Act, Section 404. |
| 15. | --- | Appendix C, Table C-4, Potential State Location-Specific Applicable or Relevant and Appropriate Requirements. This table does not include a discussion of the all of the ARARs identified by the Navy in Section C3.1.2 of the TMSRA. Please revise this table to include a discussion of §§ 666000 through 66661 of the McAteer-Petris Act. | • Table C-4 includes the substantive provisions of the McAteer-Petris Act and specific citations to Cal. Code Regs. Tit 14 concerning the Bay Plan. The comments column will be expanded to state that the McAteer-Petris Act is the enabling legislation for the San Francisco Bay Conservation and Development Commission and the San Francisco Bay Plan (please also refer to the response to EPA specific comment 16 on Appendix C). The comment will be revised as |

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| | | | follows.<br>• The San Francisco Bay Plan is an approved state coastal zone management program, and the Navy will continue to conduct its response actions in accordance with the goals of the San Francisco Bay Plan. *The McAteer-Petris Act is the enabling legislation for the San Francisco Bay Conservation and Development Commission and the San Francisco Bay Plan.*<br>• Table C-3 contains the discussion of the remaining ARARs presented in Section C3.1.2. |
| 16. | --- | Appendix C, Table C-4, Potential State Location-Specific Applicable or Relevant and Appropriate Requirements, McAteer-Petris Act. The San Francisco Bay Plan is likely an applicable ARAR rather than a relevant and appropriate ARAR. The Navy identifies the San Francisco Bay Plan at Cal. Code Regs. Tit. 14, §§ 10110 through 11990 as relevant and appropriate ARARs for response actions conducted with the San Francisco Bay coastal zone. In the comments field, the Navy states that the San Francisco Bay Plan is an approved state coastal zone management program. Please either revise the Preliminary ARAR Determination field to identify this regulation as an applicable ARAR and revise the comments field to clearly state why the regulation is applicable or edit the comments field to state why the requirement is only relevant and appropriate in spite of the federally approved status of the plan. | • The San Francisco Bay Plan is a potential ARAR through the operation of the federal Coastal Zone Management Act (CZMA). First the Navy evaluated the ARAR status of the CZMA. The CZMA excludes federal lands from its definition of coastal zone. Parcel B is federal land; therefore, the CZMA is not applicable. The CZMA also requires that federal agency activity within the coastal zone (non-federal lands) that affects any land or water use or natural resource must be conducted in a manner consistent to the maximum extent practicable with approved state coastal zone management programs. The Navy's remedial alternatives for Parcel B will affect land adjacent to the bay; therefore, the Navy identified the CZMA as relevant and appropriate. Because the CZMA is relevant and appropriate, the McAteer-Petris Act as enabling legislation and the San Francisco Bay Plan, are potential relevant and appropriate requirements through operation of the CZMA.<br>• The comment column of Table C-4 will be revised as follows. "T*he Navy has determined that the substantive provisions of the Coastal Zone Management Act are potential relevant and appropriate federal location-specific requirements for HPS Parcel B. The Coastal Zone Management Act requires federal agency activity be conducted in a manner consistent with approved state management programs to the maximum extent practicable. The McAteer-Petris Act is enabling legislation for the San Francisco Bay Plan, an approved state management program for the San Francisco Bay. Substantive provisions of the McAteer-Petris Act and the San Francisco Bay Plan are relevant and appropriate because their authority is derived from the Coastal Zone Management Act, a relevant and appropriate federal requirement.* |

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| 17. | --- | Appendix C, Table C-5, Potential Federal Action-Specific Applicable or Relevant and Appropriate Requirements, Page 2 of 6. The Navy did not indicate whether Cal. Code Regs. Tit. 22, § 66264.553(b), (d), (e), and (f) is "applicable" or "relevant and appropriate" or why this requirement is an ARAR for construction of a shoreline revetment. Please edit Table C-5 to include a Preliminary ARAR Determination and a rationale for why this requirement is an ARAR. | • Table C-5 will be revised to indicate that the preliminary ARAR determination is *Applicable*. The comment column will be revised as follows: *"The requirements are applicable for soil that meets the definitions of RCRA hazardous waste or non-RCRA state regulated hazardous waste under Cal. Code Regs. tit. 22, including sediment with concentrations of PCBs greater than or equal to 5 mg/kg. Concentrations of PCBs greater than 5 mg/kg have been measured in sediment along the shoreline of IR-07.* |
| 18. | --- | Appendix C, Table C-5, Potential Federal Action-Specific Applicable or Relevant and Appropriate Requirements, Page 2 of 6, Clean Water Act. Substantive requirements of the Clean Water Act are not indicated as "applicable" ARARs for the construction of the shoreline revetment. 33 U.S.C. § 1344, 40 CFR § 230.10 and 230.11 and 33 CFR part 323 are identified as applicable ARARs for construction of a shoreline revetment. In the comments field, the Navy indicates that they are not required to obtain a permit to discharge fill into a wetland at Parcel B but that they will comply with the permit requirements. Please edit the comments field to identify those substantive portions of the listed requirements which are the applicable ARARs for construction of a shoreline revetment. | • Please refer to the response to EPA general comment 11. |
| 19. | --- | Appendix C, Table C-5, Potential Federal Action-Specific Applicable or Relevant and Appropriate Requirements, Page 3 of 6. 40 CFR § 264.554 (a), (d), (g), (h), (I), (j), and (k) should be identified as an applicable ARAR for soil which is determined to be RCRA hazardous waste. 40 CFR § 264.554(a), (d), (g), (h), (I), (j) and (k) are identified as relevant and appropriate ARARs for stockpiling soil for off-site disposal. The comments field indicates that it is not anticipated that all soil will be RCRA hazardous waste but that these requirements are considered relevant and appropriate for all stockpiled soil. Since some of the soil may be RCRA hazardous waste, these requirements should be considered applicable ARARs for the stockpiling of soil for off-site disposal. Please revise the table to identify these requirements are applicable ARARs to soil determined to be RCRA hazardous waste. | • The text of the comments column will be revised as follows. "The Navy will temporarily stockpile soil in staging piles for off-site disposal. The Navy *will characterize the soil but* does not anticipate that soil will be RCRA hazardous waste; *in which case, these requirements are relevant and appropriate. However, these requirements would be applicable to stockpiled soil that meets the definition of RCRA hazardous waste. Therefore, the Navy will identify these requirements as either applicable or relevant and appropriate, depending on the results of sampling and analysis for waste characterization.*"<br>• The preliminary ARAR determination will remain relevant and appropriate. |

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| 20. | --- | Appendix C, Table C-5, Potential Federal Action-Specific Applicable or Relevant and Appropriate Requirements. This table does not include a discussion of 40 CFR § 761.61 even though it is identified as an action-specific ARAR in Section C2.2.3.1. Please edit this table to include a discussion of this requirement. | • The TSCA requirement of 40 CFR § 761.61(c) is identified as a potential federal chemical-specific ARAR in Section C2.2.3.1 and on Table C-1. Section C4.0, not C2.2.3.1, presents potential action-specific ARARs. The Navy did not identify 40 CFR § 761.61(c) as a potential federal action-specific ARAR. No change to the report is proposed from this comment. |
| **Appendix D, Remedial Action Alternative Cost Summary Sheets** | | | |
| 1. | --- | Costs for the Finding of Suitability to Transfer (FOST) should not be included in the alternative costs because a FOST is not part of a remedy. Please delete all FOST costs from the cost estimates. | • Navy costs for preparing the FOST are included in the cost tables in Appendix D because this document is part of the overall process leading to transfer of Parcel B. |
| 2. | --- | The wetlands mitigation necessary to restore wetlands that will be destroyed when the shoreline revetment is built is not included in the cost estimates for Alternatives S-2, S-3, S-4, and S-5. Please include wetlands mitigation costs in the cost estimates for Alternatives S-2, S-3, S-4, and S-5. | • The cost estimates for Alternatives S-2 through S-5 will be updated to include a line item for wetland mitigation costs. The area to be mitigated is a fraction of an acre (1,300 $ft^2$ or 0.03 acre) and the estimated cost ($100,000) is a rough estimate. |
| **General Comments, Appendix E, Beneficial Use Evaluation for Parcel B Groundwater** | | | |
| 1. | --- | The beneficial use evaluation in Appendix E has not adequately addressed USEPA's recommendations for evaluating groundwater using the document, Guideline for Ground-Water Classification Under the EPA Groundwater Protection Strategy, dated December 1986 (the guidance document). Attachment 5 of USEPA's letter to the BRAC Business Line Coordinator dated June 30, 1998, provided specific recommendations for determining whether a contaminated aquifer or portion of an aquifer should be considered a potential drinking water source for the purpose of making CERCLA cleanup decisions. These recommendations have been applied to groundwater at Parcel B only; however, as described in chapter 3 of the guidance document, the groundwater classification process was developed for evaluation of groundwater within a Classification Review Area (CRA), which extends beyond the boundaries of the site where groundwater is to be classified. In addition, USEPA has requested that consideration of potential health threats that may result from unanticipated or even prohibited uses of groundwater be included; however, only the B-Aquifer has been evaluated for these uses. As a result, the Navy's evaluation of groundwater at Parcel B contains several | • Subdivision of the aquifer system at HPS to include the A- and B-aquifers separated by the Bay Mud confining layer has been accepted by the regulatory agencies at least since the RI. Furthermore, the Water Board acknowledged the aquifer subdivisions in its 2003 letter exempting the groundwater in the A-aquifer as a potential source of drinking water. The beneficial use evaluation at HPS is site specific and presented parcel by parcel.<br>• The Navy acknowledges that gaps in the Bay Mud exist in limited areas. The third paragraph of Section 2.2.4.1 in the main TMSRA text notes that "Bay Mud Deposits act as an aquitard that separates the A- and B-aquifers over most of the parcel, except for part of the western portion at IR-18 and some of the central portion in IR-10, where the Bay Mud is absent and the A- and B-aquifers are adjacent."<br>• The boundary between the A- and B-aquifers (the Bay Mud), while not present everywhere, does provide separation between the aquifers for the majority of Parcel B. Strict interpretation of the groundwater classification guidance and recombination of the aquifer system at Parcel B into one unit would pose a |

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| | | discrepancies which include, but are not limited to those identified below. These issues are presented here for the purpose of identifying groundwater classification criteria that where not adequately addressed in the evaluation presented in Appendix E. These issues should not be addressed as individual discrepancies, but as part of the groundwater classification procedure outlined by the guidance document.<br><br>Parcel B groundwater was subdivided into groundwater units without demonstrating that the A, B and Bedrock Aquifers are separated by subdivision boundaries. Groundwater units are defined in Section 3.4.2 of the guidance document, as bodies of groundwater that are determined on the basis of four types of boundaries, including: 1) Permanent groundwater flow divides; 2) Extensive, low permeability geologic units (e.g., thick, laterally extensive confining beds); 3) Permanent fresh-water/saline-water contacts; and 4) Hydraulic gradient-based boundaries that separate permanent upgradient from permanent downgradient parts of a shallow groundwater unit. For the purpose of this evaluation, the A and B Aquifers would not be considered separate groundwater units based on the presence of a Type 2 boundary, since the Bay Mud unit is not extensive within the CRA. In addition, the guidance requires that the existence of one or more of these boundaries be demonstrated for all foreseeable conditions before the groundwater regime of CRA can be subdivided into separate groundwater units. Foreseeable conditions that may effect the presence of these boundaries should include, but should not be limited to, removal of leaking water supply, sanitary sewer and storm drain lines; repair or removal of segments of the sea wall barriers, unless they will be maintained as an institutional control; and installation of groundwater extraction wells or groundwater production wells. Please revise the Beneficial Use Evaluation to follow the groundwater classification procedure outlined by the guidance document. | significant obstacle for progress toward cleanup. The existing ROD prohibits all uses of groundwater to 90 feet bgs and use of groundwater will be prohibited under the amended ROD.<br><br>• Foreseeable conditions are not anticipated to change the aquifer boundaries. Changes to the water supply system or removal of the sanitary sewer and storm drain systems are not expected to cause large changes in the aquifer system at Parcel B. The seawall at Parcel B does not act as a hydrogeologic barrier within the aquifer system and does not affect the aquifer boundaries; saline groundwater extends about 500 feet inland from the shoreline, regardless of the presence of a seawall. Installation of groundwater extraction or production wells will be prohibited and this prohibition maintained by institutional controls.<br><br>• The following text will be added to Section E1.0 to more fully describe the aquifer classification at Parcel B.<br><br>*"The hydrostratigraphic units at HPS include (1) the A-aquifer, (2) the aquitard, (3) the B-aquifer, and (4) the deep bedrock water-bearing zone. The A-aquifer at Parcel B consists mainly of unconsolidated Artificial Fill that overlies the aquitard and bedrock and forms a continuous zone of unconfined groundwater across the parcel. Alluvium and colluvium, Undifferentiated Upper Sand Deposits, and shallow bedrock also are part of the A-aquifer at various locations across Parcel B. The A-aquifer generally thickens from about 15 feet in the southwest to as much as 80 feet in the northeast, but averages about 25 feet thick over most of Parcel B.*<br><br>*The B-aquifer consists mainly of Undifferentiated Sedimentary Deposits that overlie bedrock or are contained within the Bay Mud Deposits at a few locations near the bay margin. The B-aquifer is not continuous across Parcel B but exists primarily in two separate areas—along the western parcel boundary, and in a portion of the central area of the parcel. The B-aquifer ranges in thickness from about 5 to 15 feet where it is present and averages 10 feet thick.*<br><br>*Bay Mud Deposits act as an aquitard that separates the A- and B-aquifers over most of the parcel, except for part of the western portion at IR-18 and some of the central portion in IR-10, where the Bay Mud is absent and the A- and B-aquifers are adjacent. The Bay Mud Deposits generally thicken from where they pinch out against the historical shoreline in the southwest to 40 feet near the bay* |

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| | | | *margin in the northeast.*<br><br>*The boundary between the A- and B-aquifers (the Bay Mud), while not present everywhere, does provide separation between the aquifers for the majority of Parcel B. The Navy and the regulatory agencies have agreed to use this classification of the aquifer system at Parcel B and the beneficial use evaluation presented in this appendix maintains this classification system, even though the classification may vary from the strict definitions presented in EPA guidance on groundwater beneficial use (EPA 1986).*" |
| 2. | --- | An evaluation of the impact of A-Aquifer groundwater on the quality of adjacent waters, including the B-Aquifer and surface waters (i.e., wetlands and the San Francisco Bay), was not adequately addressed in Appendix E, because a low degree of interconnection between the A-Aquifer and adjacent waters has not been demonstrated. As described in Section 3.4.2 of the guidance document, a high degree of interconnection is assumed to occur where groundwater discharges to surface waters, when a lower degree of interconnection is not demonstrated. Furthermore, according to Section 4.1.1 of the guidance document, a Class I determination may be reached if groundwater that is highly vulnerable to contamination discharges to areas that are managed for the purpose of ecological protection. Section E2.2.3.8 of the TMSRA has already identified Parcel B groundwater as being highly vulnerable to contamination. Therefore, for the purpose of this evaluation, the presence of wetland habitats within the CRA that are currently, or will be, managed for the purpose of ecological protection should be identified. Discharge areas that may affect the wetland areas should then be located to determine whether the classification criteria for Class I groundwater applies to Parcel B. If a Class I or Class II determination cannot be made for groundwater, a Subclass IIIA determination should be evaluated based on the interconnectedness of groundwater with surface water. Subclass IIIA groundwaters are defined in Section 2.1.3 of the guidance document, as having an intermediate degree of interconnection to adjacent groundwater units and/or are interconnected with surface water, and as a result, they may be contributing to the degradation of the adjacent waters. The guidance document further states in Section 2.1.3 that, "Subclass IIIA groundwater may still be managed at a level similar to a level at which Class II groundwaters are managed based on the degree to which it | • The degree to which the A-aquifer discharges to the bay is not well quantified at Parcel B. The Navy recognizes the potential impact to the bay from mercury in IR-26 groundwater. No other IR site contaminants are located near enough to the bay or at a high enough concentration to be considered a potential threat to the bay. The Navy disagrees that groundwater in the A-aquifer qualifies as Class I groundwater for the following reasons.<br><br>(1) The groundwater in the A-aquifer is not "ecologically vital groundwater" as Class I groundwater is described in the guidance. Groundwater does not supply a "sensitive ecological system supporting a unique habitat" at Parcel B. The guidance indicates "A unique habitat is primarily defined as a habitat for a listed or proposed endangered or threatened species." No listed or proposed endangered or threatened species exist at Parcel B in upland areas or along the shoreline; therefore, the A-aquifer groundwater cannot be considered ecologically vital. The contribution of groundwater to the recharge of the bay is insignificant compared to other sources including rivers, creeks, and tidal interchange with the Pacific Ocean.<br><br>(2) The definition of Class I groundwater also includes a designation as an irreplaceable source of drinking water to a substantial population. No public water systems using groundwater or private supply wells are known within 2 miles from HPS. A substantial population (2,500 people according to the guidance) is not served by groundwater on or near HPS.<br><br>(3) In general, the guidance describes Class I groundwater as "It is expected that Class I decisions will be small in number. Such ground waters will generally receive extraordinary protection due to the potential risk to large numbers of citizens dependent upon a source of drinking water..." No one depends on groundwater at or near HPS. A Class I determination is not supported by the |

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| | | is connected to adjacent waters." Please revise the beneficial use evaluation to consider a high degree of interconnection between groundwater and surface water. | existing knowledge of the aquifers at HPS.<br>• The Navy has accounted for potential interconnection between groundwater and surface water. The results from the SLERA indicated only mercury in groundwater was a concern for a limited section of the shoreline at Parcel B. The plans for groundwater remediation proposed in the TMSRA will be protective of San Francisco Bay surface waters.<br>• The following text will be added to the end of Section E2.2.1 on page E-4. *"Groundwater in the A-aquifer does not qualify as Class I for the following reasons:*<br>*(1) Groundwater in the A-aquifer is not "ecologically vital groundwater" nor does it supply a "sensitive ecological system supporting a unique habitat" at Parcel B. No listed or proposed endangered or threatened species exist at Parcel B in upland areas or along the shoreline; therefore, the A-aquifer groundwater cannot be considered ecologically vital.*<br>*(2) Groundwater in the A-aquifer is not an irreplaceable source of drinking water to a substantial population. No public water systems using groundwater or private supply wells are known within 2 miles from HPS. A substantial population (2,500 people according to EPA guidance) is not served by groundwater on or near HPS.*<br>(3) *In general, the guidance describes Class I groundwater as "It is expected that Class I decisions will be small in number. Such ground waters will generally receive extraordinary protection due to the potential risk to large numbers of citizens dependent upon a source of drinking water..." No one depends on groundwater at or near HPS. A Class I determination is not supported by the existing knowledge of the aquifers at HPS."* |
| 3. | --- | Consideration of unanticipated and currently prohibited uses of groundwater was limited to the B-Aquifer; however, the A-Aquifer should also be included in this scenario, since areas of the A-aquifer are favorable for the installation of private drinking water wells. For example, according to Section E2.2.3.1 of the TMSRA, the A-Aquifer in Parcel B contains approximately 220 acre feet of available groundwater. Based on this assessment, a determination should be made as to whether A-Aquifer groundwater would represent an irreplaceable source to a | • The Navy does not believe that groundwater in the A-aquifer would become an irreplaceable source in the event of a catastrophic earthquake for the following reasons.<br>(1) Groundwater in the A-aquifer is only marginally better salinity than the EPA criterion of 10,000 milligrams per liter. Groundwater salinity would increase based on any degree of pumping for domestic use.<br>(2) Assuming necessary equipment and personnel were available, there are much |

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| | | substantial population should San Francisco's water supply be disrupted in the event of another catastrophic earthquake. This scenario is based on the concept that metropolitan areas potentially face greater health risks should the current water supply system be destroyed. Guidelines for determining whether groundwater represents an irreplaceable source to a substantial population are provided in Section 4.2 of the guidance document. Special consideration should be given to the "Unreliable Transport Mechanism" decision criteria for transportation of a replacement water supply, because A-Aquifer groundwater would be readily available in a time of crisis, thus making it less replaceable. Please revise the beneficial use evaluation to consider use of A-Aquifer groundwater in the case of a catastrophic earthquake. | more favorable locations along the San Francisco peninsula than Parcel B to develop water resources—especially areas farther from the bay that are less subject to salt water intrusion in response to groundwater withdrawal.<br>(3) According to Mr. Greg Bartow, Integrated Water Resources Program Manager for the San Francisco Public Utilities Commission, Office of Water Resources Planning, the City of San Francisco has no plans in the foreseeable future to use HPS groundwater for an emergency city water supply.<br>• No change to the report is proposed from this comment. |
| **Specific Comments, Appendix E, Beneficial Use Evaluation for Parcel B Groundwater** | | | |
| 1. | E-1 | Appendix E, Section E2.0, Evaluation of Groundwater Beneficial Uses, Page E-1: It should not be assumed that B-Aquifer groundwater will not be used for agricultural or industrial uses based solely on the redevelopment plan; potential use of this water after a catastrophic earthquake should also be considered. Please revise the beneficial use evaluation to consider use of B-Aquifer groundwater in the case of a catastrophic earthquake. | • Please refer to the response to EPA general comment 3 on Appendix E. Furthermore, only two groundwater monitoring wells are currently installed in the B-aquifer at Parcel B. Groundwater extraction from these wells, even assuming appropriate pumping equipment and trained personnel were available, would not be adequate to support more than a few individuals. No change to the report is proposed from this comment. |
| 2. | E-3 | Appendix E, Section E2.1.1, Federal Groundwater Classification Criteria, Page E-3: Class II groundwater is separated into two subclasses, IIA and IIB, but this was not considered in the beneficial use evaluation. Please distinguish between subclass IIA and subclass IIB groundwater and provide definitions for each in this section. | • The text of Section E2.2.1 will be revised as follows. "Class II groundwater is a current source (*Class IIA*) or potential source (*Class IIB*) of drinking water ..." |
| 3. | E-7 | Appendix E, Historical and Current Groundwater Use, Page E-7: The text does not state that the Basin Plan for the San Francisco Bay Region has not been amended. Please revise this section to state that the Basin Plan had not been amended at the time the TMSRA was issued. | • The text of Section E2.2.3.7 will be revised as follows. "This information on the nearby Downtown San Francisco Basin...source of drinking water. *However, although the Water Board had adopted this amendment in April 2000, the State Water Resources Control Board and Office of Administrative Law had not yet approved this amendment to the Basin Plan at the time the TMSRA was prepared.*" |
| 4. | --- | Appendix E, Table E-1, Summary of Total Dissolved Solids in Parcel B Groundwater: It is not clear why the number of Total Dissolved Solids | • The number of measurements exceeds the number of wells because, in some cases, multiple measurements were made over time from a single well. The data |

**TABLE 1: DRAFT RESPONSES TO COMMENTS FROM THE U.S. ENVIRONMENTAL PROTECTION AGENCY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | (TDS) measurements exceeds the number of wells sampled in this table. For example, according to the table, the concentration of TDS was measured in 71 wells; however, 168 measurements were used in the data set. Please identify the methodology for the data set used in the evaluation of TDS concentrations at Parcel B. | set includes all TDS data from all A-aquifer wells at Parcel B. A footnote to Table E-1 will be added to state "*The number of measurements exceeds the number of wells because more than one measurement was made at some wells. The data set for this table includes all TDS data from all A-aquifer wells at Parcel B.*" |
| 5. | --- | Appendix E, Figure E-1, Maximum Total Dissolved Solids in the A-Aquifer: It appears that the purple shaded area should extend into the vicinity of Buildings 122 and portions of Building 123, based on the total dissolved solids (TDS) values posted on this figure. Please revise the boundary between the purple shaded area and the yellow shaded area to encompass all of the areas with TDS values below 3000 mg/L. | • Figure E-1 will be revised so that the 3,000 mg/L contour includes additional area in the vicinity of Buildings 122 and 123. |
| **Minor Comments** | | | |
| 1. | A-6 | Appendix A, Section A3.5: Potentially Complete Exposure Pathways, Page A-6: This section lists the components of a complete exposure pathway as presented in USEPA's RAGS, Part A (1989). However, the presence of a receptor population is also a required component of a complete exposure pathway. Revision to address this oversight is not a required action. | • Section A3.5 will be revised to clarify that the presence of a receptor population is also required as an element for establishing a complete exposure pathway. |
| 2. | --- | Appendix C, Section C2.1.1, ARARs Conclusions for Groundwater, 4th bullet. There is an extra space between the "n" and the "s" in the word "provisions." Please edit this sentence to correct this typographical error. | • The text will be revised as suggested. |
| 3. | C-31 | Appendix C, Section C4.1.2.1, Federal ARARs, Shoreline Revetment, Page C-31. There is a typographical error in the last paragraph on Page C-31. In the last paragraph, the text states that the Navy has identified the Bay Area Air Quality Management District Regulation 6-302 "is" a potential federal action-specific ARAR. Please edit this sentence to change the typographical error "is" to "as." | • The text will be revised as suggested. |
| 4. | D-19 | Appendix D, Section D6.7, Cost Assumptions Associated with Alternative GW-3B: In Situ Treatment, Reduced Groundwater Monitoring, and Institutional Controls-SVI Injection, Page D-19: The first sentence in item #10 compares GW-3B to GW3-B when it appears that GW-3A was intended. Please correct this sentence. | • The text will be revised as suggested. |

**TABLE 2: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

The table below contains the responses to comments received from the Department of Toxic Substances Control (DTSC) on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by Thomas P. Lanphar (DTSC) on June 19, 2006; specific comment 63 was revised on July 18, 2006. Additional comments were submitted by Mr. Lanphar on September 1, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| **General Comments** | | | |
| 1. | --- | DTSC does not agree that ambient metals are naturally occurring. DTSC's position is that remedial action goals for soil should be established based on total risk and not incremental risk. DTSC can accept 'agree to disagree' language on this issue as long as the final remedy for soil is protective of total risk (i.e., ambient metals in soil). | • Total risk includes risk posed by all chemicals, including ubiquitous metals. The incremental risk addresses chemicals related to Navy activities; the Navy does not consider ubiquitous metals to be the result of Navy activity, but instead the result of the natural distribution of metals in the bedrock formations that make up Hunters Point. Remediation alternatives in the TMSRA are focused on cleaning up those chemicals related to Navy activities. Therefore, the TMSRA uses the incremental risk evaluation as the basis for alternative identification.<br>• However, remedial alternatives in the TMSRA are designed to also be protective of risks from ubiquitous metals, regardless of source. Therefore, the remedy for soil will be protective of total risk.<br>• No change to the report is proposed from this comment. |
| 2. | --- | The Navy acknowledges that the fill is contaminated with 'ubiquitous' metals; however, this must be more clearly defined in the document and the implications of this contamination carried out consistently in the establishment of remedial action objectives and soil alternatives. DTSC agrees that contamination, above ambient levels, is likely to occur in all parts of Parcel B. The fill at Parcel B is not fully characterized and therefore areas with little or no soil data are assumed to be contaminated with chemicals of concern above ambient levels. DTSC supports a soil alternative that includes containment and institutional controls for all redevelopment blocks and the entire | • The Navy believes that the practice of using of quarried local rock for fill at HPS is similar to construction practices in the same bedrock formations used elsewhere in San Francisco. The Navy observed that a wide range of concentrations of metals are found in similar chert, basalt, and serpentinite bedrock formations in other areas of San Francisco based on sampling that the Navy conducted in 2003 at areas outside of HPS (Tetra Tech and ITSI 2004).<br>• The text proposed for addition to the executive summary and new Section 1.2 (see EPA general comment 1) will help clarify this position (see Attachment 1). In addition, the text in Section 2.3.1 (partial paragraph at the top of page 2-18) will be modified to include the following. "The same condition is true for a group of metals...and zinc. *The Navy acknowledges that industrial sources for metals exist and that there is a potential that some concentrations of metals could have sources other than naturally occurring rock.* |

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| | | shoreline of Parcel B. | *The Navy has worked to remove these sources during the remedial actions taken to date. However, the widespread distribution of metals remaining in soil is consistent with the concentrations present in native rock. Remedial alternatives in this TMSRA will be designed to be protective of risks from these metals concentrations, regardless of source.* Section 3.0 and..."<br>• Remedial alternatives in the TMSRA are designed to also be protective of risks from ubiquitous metals, regardless of source. Alternatives S-4 and S-5 include containment (using covers and a shoreline revetment) and institutional controls for all redevelopment blocks at Parcel B. |
| 3. | --- | The Navy proposes to eliminate most of the groundwater monitoring requirements of the current ROD. Groundwater alternatives in the TMSRA only address volatile organic compounds (VOCs) and mercury. DTSC does not agree with the removal of other metals from groundwater monitoring. While DTSC is open to negotiating changes in the groundwater monitoring program, DTSC requests that monitoring for metals along the shoreline continue and is expanded to include additional monitoring points at IR-20 and IR-26. | • Proposed constituents for groundwater monitoring are based on risk posed by groundwater to human health and the environment.<br>• Changes to the current RAMP sampling will not be implemented until after the approval of the amended ROD for Parcel B.<br>• DTSC's proposed additions to the RAMP for IR-20 and IR-26 are not related to the TMSRA and should be addressed separately in another forum. The TMSRA is not intended to be a mechanism to modify the current RAMP sampling.<br>• No change to the report is proposed from this comment. |
| 4. | --- | Mercury is known to occur in groundwater near the shoreline and soil at 10 feet below the surface. Passive remediation of mercury in groundwater is proposed. DTSC disagrees that passive remediation is appropriate for mercury in groundwater since mercury is not destroyed through natural processes. DTSC believes the source of the mercury in groundwater is still present at IR-26 and requests the removal of the mercury source prior to monitoring groundwater to determine if the bay surface water is protected. | • The TMSRA evaluates excavating and removing additional soil beneath Excavation EE-05 to remove potentially remaining mercury source material. The Navy has installed two new groundwater monitoring wells in the area near well IR26MW47A where mercury was detected in groundwater. A third well will be installed within the area of Excavation EE-05 after selection of the final remedy and completion of the mercury source removal.<br>• The size of the soil/water partition coefficients for the likely mercury species present in soil and groundwater at the site indicates a preference for sorption to soil. Thus, with removal of the source materials through excavation, it is likely that remaining mercury species dissolved in groundwater would attenuate through sorption into soil over time.<br>• Please also refer to the responses to EPA specific comments 59 and 61 and DTSC (Lanphar) specific comment 58. |

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| **Specific Comments** | | | |
| 1. | ES-1 | Page ES-1, Purpose and Background of TMSRA. One of the reasons for amending the Parcel B Record of Decision (ROD) and what provided a better understanding of the nature of soil contamination at Parcel B was the difficulty in meeting soil remediation goals during the post-Parcel B ROD soil excavations. That experience has led to the new site conceptual model recognizing that the Parcel B fill is not well characterized and is likely contaminated throughout the parcel with metals above ambient levels. Please modify this section to reflect this history. The TMSRA does acknowledge this issue in Section 2.1.3.1. | • Please refer to the responses to EPA general comments 1 and 5 and DTSC (Lanphar) specific comment 17.. |
| 2. | ES-1 | Page ES-1, Purpose and Background of TMSRA. Please revise the document and define what is meant by 'the ubiquitous nature of certain chemicals in soil'. DTSC understands this statement to refer to chemical contaminants in fill that are above ambient levels and potentially occur in soil throughout Parcel B; even in those areas that are not well characterized. | • Please refer to the response to EPA general comment 1. In the TMSRA, the term ubiquitous refers to metals that are naturally occurring or have no known industrial source and are in the same concentration ranges as naturally occurring metals in the same geologic formations in the San Francisco area. Other contaminants, such as polynuclear aromatic hydrocarbons (PAH), may occur at multiple site locations but are not considered ubiquitous. |
| 3. | ES-3 | Page ES-2, Hunters Point Shipyard Background. The text states that after World War II activities at Hunters Point Shifted to submarine maintenance and repair. Were the activities limited to only this? What other ship maintenance occurred at Hunters Point after World War II? The decontamination of Operation Crossroads ships occurred after World War II. Also, please add a sentence or two about the activities of the Naval Radiological Defense Laboratory. | • The executive summary in the first paragraph on page ES-2 will be revised to include the following text. "After World War II, activities at Hunters Point Shipyard shifted to submarine maintenance and repair. *However, the Navy continued to operate carrier overhaul and ship maintenance and repair facilities through the 1960s. Other significant activities after World War II included decontamination of ships used during Operation Crossroads nuclear weapons tests; these activities occurred mainly in 1946 and 1947.* Hunters Point Shipyard was also the site of the Naval Radiological Defense Laboratory *from the late 1940s until 1969. Initial tasks for the laboratory included research into decontamination methods, personnel protection, and development of radiation detection instrumentation. Laboratory responsibilities grew to also include practical and applied research into the effects of radiation on living organisms and on natural and synthetic materials, in addition to continued decontamination experimentation.* Hunters Point |

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| | | | Shipyard was deactivated..." |
| 4. | ES-3 | Page ES-3, Parcel B History and Setting. Please add that sources of fill included construction debris and other waste materials. | • The executive summary in the first paragraph on page ES-3 will be revised to include the following text. "...constructed by placing borrowed fill material from a variety of sources, including serpentinite bedrock from the shipyard, *construction debris, and waste materials (such as used sandblast materials)*. The fill supported..." |
| 5. | ES-3 | Page ES-3, Parcel B History and Setting. In the first paragraph of Page ES-3 it states, "No threatened or endangered species are known to inhabit Hunters Point Shipyard or its vicinity." Please check the accuracy of this statement. For example peregrine falcons are known to hunt and perhaps nest on Hunters Point Shipyard. The statement also implies that animal species are not a concern at Hunters Point Shipyard. Additional statements about other ecological concerns, for example burrowing owls and migratory birds, would provide a better description of the ecological concerns that the Navy is responding to at Hunters Point Shipyard. | • Please see the response to EPA specific comment 2. Although the Parcel B FS reported that "a peregrine falcon has been observed at HPS" there is no indication of routine use of Parcel B for foraging or nesting activities. It would be incorrect to assume animal species are not a concern at Parcel B; the SLERA evaluates potential exposures to several animal receptors, including a variety of birds and mammals. The red-tailed hawk was selected to represent carnivorous birds. Burrowing owls have not been observed at Parcel B.<br>• The executive summary in the first paragraph on page ES-3 will be revised to include the following text. "Therefore, the Navy investigated the shoreline areas, and this TMSRA evaluates potential risk to shoreline receptors, *including benthic invertebrates, birds, and mammals*." |
| 6. | ES-5 | Page ES-5, Updated Risk Evaluation Summary. When discussing total and incremental risk exposure areas please include a discussion of the limitations of this assessment due to the ubiquitous nature of certain chemical contaminants, or chemicals of concern (COCs) in soil (see ES-1). Please state that the conclusion of the risk assessment is limited and that areas of Parcel B with little or no data are also assumed to be contaminated with non-ambient ubiquitous chemical contaminants. Therefore, these areas also present an unacceptable incremental risk. Please identify which chemicals what chemical contaminants and the approximate concentration range the Navy believes are ubiquitous. | • While ubiquitous metals may pose unacceptable risk in areas that are currently not represented by sample data, it would be incorrect to assume this is always the case. Nevertheless, the Navy proposes to address all areas at Parcel B in the alternatives, although risk has not been quantified as occurring above background levels in all redevelopment blocks. The remedies will be protective of potential exposure to ubiquitous metals that may pose unacceptable risk. Covers to eliminate the exposure pathway will be an important component of the remedy.<br>• Ubiquitous metals at HPS include aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, magnesium, manganese, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. Calculations of Hunters Point ambient levels for most of these metals is detailed in "Draft Calculation of Hunters Point Ambient Levels" (PRC 1995). In addition, the Navy will provide the results of off-site soil sampling for metals in Appendix J. Please refer to these two sources for concentration ranges of metals at HPS (within the geologic unit known as the Hunters Point Shear |

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| | | | Zone).<br>• The use of soil covers will be further clarified in the second paragraph of Section 5.1 by expanding the text as follows. "...eliminate complete exposure pathways. *Soil covers to eliminate exposure will be protective not only of potential unacceptable risk identified by the HHRA, but also of potential unacceptable risk posed by ubiquitous metals that are likely to be present in locations that are not characterized by sample data. Covers will use existing materials (rehabilitated as necessary) as well as newly installed materials to eliminate exposure.* Various institutional controls..." |
| 7. | ES-5 | Page ES-5, TMSRA Evaluation Process. Please include a short description of the site conceptual model that explains and supports the conclusion that incremental soil risk is elevated due to the presence of certain non-ambient ubiquitous chemical contaminants. Important concepts to convey are 1) fill sources include construction and other waste debris; 2) the difficulty meeting soil remediation goals during the post Record of Decision soil remedial actions; and 3) data is limited in some areas and therefore not well characterized. | • The executive summary will be expanded to include a brief section titled "Updated Characterization of Soil and Groundwater" and will summarize information contained in Section 2.3. The following text will be added following the section titled "Parcel B Remedial and Regulatory Activities since the 1997 Record of Decision." "*The Navy's knowledge of the distribution of inorganic chemicals in native soil and artificial fill has increased greatly as a result of the extensive excavations and sampling at Parcel B since 1998. In particular, the ubiquitous nature of metals in fill is much clearer now than during the initial design of the remedial action and is a large part of the reason for the reevaluation presented in this TMSRA. The characterization of chemicals in groundwater at Parcel B has increased greatly since the 1997 ROD. The implementation of the remedial action monitoring program in 1999 and the subsequent, continuous quarterly monitoring have increased the knowledge of the distribution of chemicals in groundwater.*" The text added earlier in the executive summary will also serve to further explain sources of fill (see response to DTSC [Lanphar] specific comment 4) and the difficulty in meeting ROD soil cleanup goals (see responses to EPA general comments 1 and 5). Please see the response to DTSC (Lanphar) specific comment 6 for discussion of data limitations. |
| 8. | ES-5 | Page ES-5, TMSRA Evaluation Process. The text states that ambient metals are considered by the Navy to be naturally occurring. DTSC does not agree with the Navy on this point. DTSC position is that the fill is contaminated with metals released to the environment during the construction of the shipyard. DTSC can accept 'agree to disagree' language on this matter, if the final soil remedy protects public health and the environment from | • Please refer to the response to EPA general comment 5 and DTSC (Lanphar) specific comment 6. The Navy proposes to cover all areas at Parcel B and these covers will be protective of potential exposure to ubiquitous metals that may pose unacceptable risk. |

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| | | the "total" risk posed by metals in the fill. | |
| 9. | ES-7 | Page ES-7 Identify Remedial Alternatives. Specific comments on Remedial Alternatives are provided in DTSC's comments on Section 5. | • Please see the responses to DTSC (Lanphar) specific comments 61 through 64. |
| 10. | ES-9 | Page ES-9 Evaluation Results for Soil and Groundwater Alternatives. Specific comments on Remedial Alternatives are provided in DTSC's comments on Section 5. | • Please see the responses to DTSC (Lanphar) specific comments 61 through 64. |
| 11. | 1-2 | Page 1-2, Section 1.3 Purpose and Organization of Report. Please list the elements of the Parcel B Feasibility Study that require updating. | • The text of the first paragraph of Section 1.3 will be revised as follows. "...only those elements requiring updates to support or reflect the proposed amendments to the ROD are provided. *For example, updates are included for the HHRA, the SLERA, and the soil and groundwater characterization, but updates are not necessary for topics where there have been no changes since the ROD (such as climate and topography).*" |
| 12. | 1-3 | Page 1-3, Section 1.3 Purpose and Organization of Report, first bullet. Please change the word 'elements' to 'chemical contaminants' or chemicals of concern (COCs). This change will help differentiate between ambient metals and the certain contaminants that are uniformly distributed and are expected to occur in areas that have not been characterized or lack data. | • The text of the first bullet on page 1-3 will be modified to replace "elements" with "metals." The term "chemical of concern" applies to any compound, organic or inorganic, and would not be correct in the context of the sentence in question. The intent of the sentence was to describe metals. Furthermore, the term COC also implies a chemical-specific excess lifetime cancer risk greater than $10^{-6}$ or a noncancer risk (hazard index) greater than 1. The statement was not intended to imply any risk level. |
| 13. | 2-5 | Page 2-5, Section 2.1.3.2 History of Groundwater Actions. Please include a discussion of the Technical Memorandum Parcel B Groundwater Evaluation, Draft November 30, 2001. Please include in this discussion the objective of the evaluation, conclusions of the evaluation and how this study is or is not used in developing Chemicals of Concern and remedial objectives. | • The cited report does not provide any new data, but only summarizes and interprets data that were available at that time. An updated interpretation of groundwater conditions is included in the TMSRA and a review of previous interpretations is not necessary for selection of remediation alternatives. The cited report is not used in the TMSRA for development of COCs or remediation objectives. No change to the report is proposed from this comment. |
| 14. | 2-5 | Page 2-5, Section 2.1.3.2 History of Groundwater Actions. Please discuss the study to determine whether the RU-C5 contaminant plume had migrated across the B/C parcel | • Please refer to the response to EPA specific comment 16. |

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| 15. | 2-12 | Page 2.12, Section 2.1.5.4 First Five-Year Review, Recommendation and Follow–up Actions for Groundwater, Second Bullet. The document states that the TMSRA does not contain specific recommendations for trigger levels and that specific detail would be contained in the remedial design following the ROD amendment. Please distinguish between what the Navy defines as a trigger level and a remediation goal. Tables 3-18 and 3-19 do list remediation goals for groundwater in the A and B aquifers. | • In the cited discussion of the five-year review, the term "trigger level" refers to the remedial action monitoring program (RAMP), not to any remediation goal proposed in the TMSRA. RAMP trigger levels are the comparison criteria against which groundwater data are compared. The TMSRA identifies remediation goals for groundwater in conjunction with the results of the risk assessments to target areas in groundwater that may require remediation. Appendix I will be added to the TMSRA to discuss trigger levels for groundwater to address potential migration to surface water (similar to the discussion provided for the Parcel D FS).<br>• The text of the second bullet on page 2-12 will be revised as follows. "Trigger levels should be reevaluated. *Appendix I of the TMSRA contains recommendations for revised trigger levels.*" |
| 16. | 2-12 | Page 2-12, Section 2.1.5.4 First Five-Year Review, Recommendation and Follow –up Actions for Groundwater, Sixth Bullet. The five-year review recommended the installation of a point of compliance well and characterization wells at IR-07. These wells are not included in TMSRA proposal for continued groundwater monitoring. | • As stated in the text of the sixth bullet, five wells (IR07MWS-4, IR07MW21A1, IR07MW24A, IR07MW25A, and IR07MW26A) were reinstalled at IR-07, as recommended in the five-year review. The TMSRA used data collected from these reinstalled wells for the risk assessments, which did not show risk associated with groundwater in this part of Parcel B. Therefore, the TMSRA did not propose additional groundwater monitoring at these wells. No change to the report is proposed from this comment. |
| 17. | 2-13 | Page 2-13, Section 2.2 Updated Conceptual Site Model. A primary objective of the conceptual site model is to convey the source, location, and pathways of contamination. The conceptual site model in this section, or in Appendix A, does not meet this objective. Through earlier investigations and remedial actions at Parcel B we now understand the ubiquitous nature of certain chemical contaminants in soil. These ubiquitous chemicals contaminants should not be confused with ambient metals. Therefore a new conceptual site model requires development. Please develop a new conceptual site model for Section 2.2 and Appendix A that includes the | • In the TMSRA, the term ubiquitous refers to metals that are naturally occurring, or have no known industrial source and are in the same concentration ranges as naturally occurring metals in the same geologic formations in San Francisco area.<br>• (1) and (2) Please refer to the responses to DTSC (Lanphar) specific comments 6 and 7. The text of Section 2.3 will be revised as follows to further explain changes to the conceptual site model.<br>"The nature of contaminants at Parcel B can mostly be attributed to industrial activities by the Navy or other tenants, except for several *ubiquitous* metals present throughout Parcel B ~~at ambient concentrations~~. *The position that discrete releases of chemicals (the "spill" model) were the sources for contamination that was the basis for the ROD and remedial actions was not valid everywhere at Parcel B. Nevertheless, the Navy did successfully* |

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| | | following elements.<br>1. Soil removals at Parcel B were often unable to meet Remedial Action Objectives, thus indicating the incomplete characterization of contaminated soil sites.<br>2. The sources and condition of fill used to construct Hunters Point Shipyard is not known. Earlier soil removal actions have indicated that the fill is contaminated with construction and other waste debris. Without extensive fill characterization the assumption is that the fill is generally contaminated with ubiquitous chemical contaminants.<br>3. The soil risk assessment relies on an incomplete data set. Therefore Redevelopment Blocks with limited or no data can not be assumed to be free of risk, but are instead assumed to pose an unacceptable risk.<br>4. The fill at Hunters Point also contains ambient metals at concentrations that present an unacceptable total risk. The source of the ambient metals is the native serpentine bedrock and soil found at Hunters Point. The source of the ubiquitous chemical contaminants is the mingling of construction and other waste debris with other fill sources. | *achieve the ROD remediation goals at the majority of excavations conducted during the remedial actions. However, based on the knowledge gained during the remedial actions, the conceptual site model needs to be supplemented to account for the ubiquitous nature of metals contained in the fill used to construct many areas of Parcel B and to address the use of debris as fill at IR-07/18. The spill model for chemical releases does not apply to the debris fill at IR-07/18 or for other areas where quarried native rock was used as fill. The remedial alternatives proposed in the TMSRA address these changes to the conceptual site model."*<br>• (2) The Navy has records documenting the placement of contaminated fill at several areas, including IR Sites 1, 2, 7, and 18. Aerial photographs show the placement of fill derived from the highlands. While there is some uncertainty regarding the mixing of clean and contaminated fill, it would not be correct to assume that the fill is generally contaminated with ubiquitous chemical contaminants.<br>The Navy strongly disagrees that chemical contamination is ubiquitous at Parcel B. The term ubiquitous implies that there is contamination everywhere and that is not the case. Soil removals at Parcel B were unsuccessful at IR-07 and IR-18 because the fill material was contaminated before it was placed and placement of the fill resulted in a heterogeneous mixture of clean and contaminated fill. In addition, HPALs were adopted as cleanup goals for metals. Because of the statistical method used to calculate HPALs, a percentage of soil samples are expected to exceed the goals even when the soil is clean.<br>• (3) The Navy believes that the soil risk assessment data set is sufficient to evaluate the remediation alternatives described in the TMSRA. Redevelopment blocks with no data exist because there is no reason to expect a spill or release, and therefore, no reason to collect data.<br>• (3) and (4) Please refer to the response to DTSC (Lanphar) specific comment 6 and EPA general comment 5. While ubiquitous metals likely pose unacceptable risk in areas that are currently not represented by sample data, it would be incorrect to assume this is always the case. Nevertheless, the Navy proposes to address all areas at Parcel B in the alternatives, although risk has not been quantified as occurring above background levels in all redevelopment blocks. The remedies will be protective of potential exposure to ubiquitous metals that may pose unacceptable risk. |

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| 18. | 2-16 | Page 2-16, Section 2.2.4.2 Groundwater Flow Patterns. Groundwater flow patterns were created using data collected in November 2004. Please update the draft final using more recent data. Also please discuss changes in groundwater flow due to the shutting off of the sanitary sewer system. Please identify the date that the sanitary sewer system was shutdown in Parcel B. | • Concerning groundwater flow patterns, please refer to the response to EPA specific comment 4.<br>• The sewers are scheduled to be shut off in early 2007. After this date, the sewers will no longer be operable or able to transport water. Quarterly monitoring scheduled after the shut down, will likely show changes in groundwater flow. Subsequent groundwater monitoring reports will address any observed changes in groundwater flow. |
| 19. | 2-17 | Page 2-17, Section 2.2.4.3 Beneficial Use of Groundwater, B-Aquifer. The text states that the groundwater ingestion pathway for Parcel B is included in the human health risk assessment because of agreements with the BCT. Explaining the rationale for the inclusion of Parcel B groundwater in the human health risk assessment would be more illuminating. Please explain in the text that because the B aquifer is legally considered a potential source of drinking water, the human health risk assessment must evaluate the risk of ingestion of B aquifer groundwater. If the ingestion of B aquifer groundwater does pose a health risk remedial action will be necessary. This action will likely be in the form of an institutional control that prohibits the human consumption of B aquifer groundwater. | • The text of Section 2.2.4.3 on the top of page 2-17 will be modified as follows. "However, the groundwater ingestion pathway is included in the human health risk assessment for the B-aquifer groundwater because of agreements with the BCT on the methodology for the human health risk assessment (see Section 3.0 and Appendix A), *and because the groundwater in the B-aquifer has not been exempted from the potential municipal and domestic beneficial uses specified in the Water Quality Control Plan for the San Francisco Bay Region*"<br>• This revision also applies to similar text in Section 3.1.1 (first paragraph on page 3-3) and Appendix A (first paragraph on page A-8).<br>• Institutional controls for groundwater are discussed in Section 4.3.2.1. |
| 20. | 2-17 | Page 2-17, Section 2.3 Updated Characterization of Soil and Groundwater. Please provide a caveat in this section that references the new conceptual site model and the contaminated nature of the fill. The current text does not support this new model. For example, the text states, "The nature of contaminants at Parcel B can mostly be attributed to industrial activities by the Navy or other tenants, except for several metals present throughout Parcel B at ambient concentrations." This statement does not acknowledge the disposal activities that were also | • Please refer to the responses to DTSC (Lanphar) specific comments 6, 12, and 17. Changes to the text of Section 2.3 will be as discussed in the response to DTSC (Lanphar) specific comment 17. |

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| | | apart of the construction of the fill at Hunters Point. Also, please identify the chemicals of concern that are believed to be ubiquitous in nature. Please identify the expected concentration range of these chemicals. | |
| 21. | 2-18 | Page 2-18, Section 2.3.1Overview of Soil. When discussing soil characterization in Parcel B and the shoreline please discuss the limitations of the soil remedial actions (i.e. the inability to meet soil cleanup goals) and difficulties in collecting soil and sediment samples along the shoreline (i.e. planned sample collection locations were not sampled because of the presence of rip rap). | • Please refer to the responses to DTSC (Lanphar) specific comments 6 and 17 concerning limitations of remedial actions.<br>• Details concerning difficulties in collecting sediment samples along the shoreline were previously discussed in Section 2.1.2 and do not need to be repeated. No change to the report is proposed from this comment. |
| 22. | 2-18 | Page 2-18, Section 2.3.2 Overview of Groundwater. Please clearly state which quarterly groundwater monitoring data is being used to determine the extent of plumes. The November 2004 quarterly data seems to be the most recent groundwater data used when discussing groundwater contamination in the text and the figures. However, 2005 data is used when describing mercury in groundwater at IR-26. | • The following text will be added to the end of the first paragraph of Section 2.3.2. "*The groundwater data used in this TMSRA (especially for risk assessment and data analysis) include samples collected through November 2004. Narrative descriptions of groundwater data in the text of the TMSRA have been updated to account for samples collected through May 2006. However, data sets (for example, those used for the HHRA and SLERA) have not been updated. The Navy has reviewed the results of samples collected after November 2004 and has found no reason to expect that the new data would change the groundwater characterization discussed here.*" |
| 23. | 2-18 | Page 2-18, Section 2.3.2 Overview of Groundwater and Table 2-3 RAMP Wells and Exceedences.<br>a. Please refer to and describe Table 2-3 in the text.<br>b. Please update the table to include the most recent groundwater monitoring data.<br>c. Please identify the dates of the quarterly groundwater monitoring events. | • (a) Section 2.1.3.2 introduces and discusses Table 2-3. No change to the report is proposed from this comment.<br>• (b) Table 2-3 will be updated to include data collected through May 2006 (quarter 26).<br>• (c) Table 2-3 will be modified to include the dates of the monitoring events. |

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| | | d. Please identify on the table for each quarter the chemical analytes with detection limits that exceed the RAMP criteria. For example, analytes with detection limits above the RAMP criteria could be shown with a colored font (e.g. Zn ).<br>e. Please discuss any issues that would affect the quality of groundwater data, including detection limits above screening criteria and issues with groundwater sample collection. | • (d) Table 2-3 is intended only to provide an overview of the results of the RAMP, not an in-depth analysis. Information concerning analytical detection limits for each sample, for each monitoring event is available in the individual quarterly monitoring reports. A table showing practical quantitation limits that exceed the RAMP comparison criteria (if any) will be added to the Parcel B quarterly groundwater monitoring reports beginning in the third quarter of 2006. The risk assessments in the TMSRA consider detection limits and nondetected results. No change to the table is proposed from this comment.<br>• (e) Please refer to the response to previous comment (d). The following text will be added to Section 2.1.3.2 in the first paragraph on page 2-6 in the discussion of the RAMP. "Table 2-3 identifies chemicals that exceeded RAMP criteria, *...Table 2-3 is intended to provide an overview of the results of the RAMP; please refer to the individual quarterly reports for details such as detection limits and specific issues that might affect groundwater data quality for any individual sampling event.*" |
| 24. | 2-18 | Page 2-18, Section 2.3.2 Overview of Groundwater – Mercury plume at IR-26.<br>a. Please include a figure of IR-26 showing the locations of the monitoring wells, the area and depth of the excavation and the locations and concentration of mercury in soil. Also indicate the location of the conduit/tunnel coming from the adjacent dry dock, and the depth to groundwater (below ground surface).<br>b. The available data for mercury in soil and groundwater is not sufficient to characterize the site and make conclusions as to whether mercury is not impacting the San Francisco Bay. Mercury was detected in bottom (approximately ten feet below ground surface and possibly in groundwater) composite samples at a concentration of as much as 90 mg/kg. Mercury at this concentration indicates the continued presence of mercury source for groundwater contamination. The conclusion stated in the last paragraph of page 2-19 only further indicate that the Navy does not understand | • (a) Figure 2-12 will be added to illustrate the location of Excavation EE-05, the surrounding groundwater monitoring wells, and the location of structures, including the drainage tunnel. The approximate depth to groundwater in this area will be labeled on the figure. Please refer to Figure EE-05C of the Construction Summary Report for details of the confirmation samples collected for mercury.<br>• (b) The Navy has installed two new groundwater monitoring wells in the area near well IR26MW47A. A third well will be installed within the area of Excavation EE-05 after selection of the final remedy and completion of the mercury source removal. Please refer to the response to EPA specific comment 59.<br>• (c) The text of Section 2.3.2 describes the distribution of soil and groundwater samples analyzed for mercury at IR-26 and the uncertainties created by the complex geochemistry of mercury in groundwater. The addition of three groundwater monitoring wells in this area will further reduce the uncertainties related to the mercury distribution in groundwater at IR-26. No change to the text is proposed from this comment.<br>• (d) The ROD established the soil cleanup goal for mercury at 2.3 mg/kg to be protective of human health. This concentration is the HPAL for mercury. Mercury concentrations in sediment at IR-26 were less than the HPAL so the SLERA did not calculate a sediment cleanup goal. Therefore, it cannot be determined whether the HPAL is protective of |

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| | | the nature and extent or the fate and transport of mercury in groundwater at IR-26.<br>c. Please critically analyze and describe the limitations of mercury data at IR-26.<br>d. Please explain the basis of the 2.3 mg/kg cleanup goal for mercury. Is this concentration considered protective of surface water? | surface water. However, the Navy does not excavate any metal in soil to a concentration below its HPAL. |
| 25. | --- | Section 2 Figures. Please include a figure that shows the location of wells with RAMP exceedances, including exceedances of the detection limits. Please include on this figure a spider diagram showing the chemical and concentration (or detection limit if detection limit exceeded RAMP criteria). | • The discussion in Section 2.1.3.2 is intended only to provide an overview of the results of the RAMP in sufficient detail to support the evaluation of alternatives, not to provide an in-depth analysis. Information concerning analytical detection limits for each sample, for each monitoring event is available in the individual quarterly monitoring reports. A table showing practical quantitation limits that exceed the RAMP comparison criteria (if any) will be added to the Parcel B quarterly groundwater monitoring reports beginning in the third quarter of 2006. The risk assessments in the TMSRA consider detection limits and nondetected results. No change to the report is proposed from this comment. |
| 26 | 3-2 | Page 3-2, Section 3.1.3 Exposure Scenarios and Pathways. Mercury is a volatile metal. Please evaluate the human health risk of mercury in subsurface soil and groundwater through the inhalation pathway as part of the TMSRA. | • Please refer to the response to EPA specific comment 21 regarding the planned evaluation of vapor inhalation exposure to mercury in groundwater in the TMSRA.<br>• Minimal partitioning of mercury in soil from a nonvolatile phase to a gaseous phase is expected, as mercury in soil tends to complex with anions and form mercury compounds with limited mobility and volatility. For this reason, inhalation from volatilization of mercury in soil to ambient air is not evaluated in the TMSRA. Inhalation of mercury compounds released to ambient air in particulate form (from wind erosion) is also not evaluated in the TMSRA because toxicity criteria are not available for the evaluation of mercury compounds in the form of airborne particulates. Please also refer to the response to DTSC (Lanphar) specific comment 58.<br>• As stated in the groundwater HHRA methodology documents developed for HPS, risks from vapor intrusion of volatile chemicals in the unsaturated zone will not be quantitatively assessed in the HHRA because soil gas data for HPS are not of sufficient quality for HHRA. The uncertainty analysis presented in Appendix A will be revised to address this limitation. It should be noted that concentrations of volatile chemicals in groundwater alone result in elevated vapor intrusion risks across Parcel B and engineering |

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| | | | or occupancy controls are, therefore, proposed for indoor air. |
| 27. | 3-2 | Page 3-2, Section 3.1.3 Exposure Scenarios and Pathways. The example for an indirect exposure pathway (inhalation) is incorrect. Inhalation is a direct exposure pathway. Eating produce that is contaminated from chemical uptake or fish that has concentrations of bio-accumulated chemicals are examples of indirect exposure pathways. | • The text of Section 3.1.1 on page 3-2 will be revised as follows. "Both direct exposure pathways (for example, ingestion) and indirect exposure pathways (for example, ~~inhalation~~ *ingestion of home-grown produce*) were identified..." |
| 28. | 3-3 | Page 3-3, Section 3.1.1 Exposure Scenarios and Pathways. The text states that the groundwater ingestion pathway for Parcel B is included in the human health risk assessment because of agreements with the BCT. Explaining the rationale for the inclusion of Parcel B groundwater in the human health risk assessment would be more illuminating. Please explain in the text that because the B aquifer is legally considered a potential source of drinking water, the human health risk assessment must evaluate the risk of ingestion of B aquifer groundwater. If the ingestion of B aquifer groundwater does pose a health risk remedial action will be necessary. This action will likely be in the form of and institutional control that prohibits the human consumption of B aquifer groundwater. | • Please refer to the response to DTSC (Lanphar) specific comment 19. |
| 29. | 3-3 | Page 3-3, Section 3.1.1 Exposure Scenarios and Pathways. Risk plumes were developed using data collected at Parcel B through November 2004. As DTSC comments on the quarterly reports have indicated, issues with sample collection, detection limits, and removed and replaced wells raise concerns with the quality of the groundwater data. Improvements to the groundwater monitoring program were undertaken by the Navy after November 2004. Some replace Point of Compliance Wells and Post Remedial Action wells have very few quarterly monitoring events as of November 2004. Please update these risk | • Please refer to the response to EPA specific comment 4. The risk assessments and databases included in the TMSRA will not be updated for samples collected after November 2004. |

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| | | plumes in the draft final using the most recent laboratory certified data. | |
| 30. | 3-4 | Page 3-4, Section 3.1.1 Exposure Scenarios and Pathways; top paragraph. Please explain further in the text how groundwater risk from "non-plume exposure areas" will be evaluated using the exposure area grids established for soil. | • The text of Section 3.1.1 at the bottom of page 3-3 will be revised as follows. "Chemical concentrations measured from some groundwater monitoring locations at Parcel B were not associated with risk plumes; these *nonplume-based locations were evaluated on a grid-basis, using the same grid system that was used in the HHRA to evaluate soil exposures as an efficient mechanism to locate each nonplume risk evaluation."* |
| 31. | 3-4 | Page 3-4, Section 3.1.1 Exposure Scenarios and Pathways. Please refer to the appropriate figure in Appendix A when discussing soil risk and groundwater risk plumes. | • The text of Section 3.1.1 in the last paragraph on page 3-3 will be revised as follows. "The risk plumes were developed using a specific methodology…(see Attachment A4, *Figures A4-1 through A4-3*)." Remaining figures are referenced in Sections 3.1.3 and 3.1.4 that discuss the soil and groundwater risk results. |
| 32. | 3-4 | Page 3-4, Section 3.1.2 Total and Incremental Risks for Exposure to Soil. Please include, in the text, a caveat stating that the total and incremental risk calculations and figures are based on available data and that some sites and redevelopment blocks have limited (not fully characterized) or no data. Please further state in the text that because of the ubiquitous nature of some chemical contaminants the risk in areas with limited or no data can not be determined and are assumed to present unacceptable risk. | • Please refer to the response to DTSC (Lanphar) specific comment 6. The Navy believes that the risk assessment data set is sufficient to evaluate the remediation alternatives for soil that are presented in the TMSRA, and that chemical contamination is not ubiquitous across Parcel B. No change to the report is proposed from this comment. |
| 33. | 3-4 | Page 3-4, Section 3.1.2 Total and Incremental Risks for Exposure to Soil. Please identify the chemicals contaminants (non-ambient) that are believed to be ubiquitous and concentrations for these contaminants so that risk can be calculated and communicated. | • The Navy disagrees that there is ubiquitous chemical contamination across Parcel B. Please refer to the response to DTSC (Lanphar) specific comment 6. No change to the report is proposed from this comment. |
| 34. | 3-4 | Page 3-4, Section 3.1.2 Total and Incremental Risks for Exposure to Soil; Requested Figure. Please include figures that show total and incremental risk by redevelopment block. Redevelopment blocks with limited or no data should also show unacceptable risk due to the | • Figures 3-2 and 3-3 show total risk based on planned reuse by redevelopment block. Figures 3-5 and 3-6 show incremental risk based on planned reuse by redevelopment block. No new figures or figure revisions are proposed to be added as a result of this comment. Please refer to the response to DTSC (Lanphar) specific comment 6 regarding |

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| | | ubiquitous nature of some chemical contaminants. | redevelopment blocks with limited or no data. |
| 35. | 3-5 | Page 3-5, Section 3.1.3.1 Total Risk Evaluation. Please include a note at the foot of the table explaining why surface soil risk is not applicable for the industrial or construction worker. | • Surface soil exposures were evaluated for the industrial worker scenario (see Appendix A of the TMSRA). Footnote 1 of the table will be modified as follows. "Chemicals of concern identified for this exposure scenario are based on the planned reuse of Parcel B. *No chemicals of concern were identified for the exposure of industrial workers to surface soil.*"<br>• Based on discussions and an agreement with the BCT in March 2004, evaluation of construction worker exposure to soil in the HHRA was limited to subsurface soil (0 to 10 feet bgs). This depth range includes sample results from surface soil samples. Footnote 2 will be revised as follows. "The construction worker exposure scenario is not associated with a specific planned reuse for Parcel B. *Based on discussions and an agreement with the BCT, evaluation of construction worker exposure to soil was based on subsurface soil from 0 to 10 feet bgs; this depth range includes surface soil (0 to 2 feet bgs) exposure.*" |
| 36. | 3-6 | Page 3-6, Section 3.1.3.2 Incremental Risk Evaluation. Please include in the text the caveat that the calculated risk is based on collected data and that Redevelopment Blocks, which are not fully characterized or lack data, are also assumed to present an unacceptable risk. | • Please refer to the response to DTSC (Lanphar) specific comment 6. |
| 37. | 3-6 | Page 3-6, Section 3.1.4 Risk Summary for Groundwater. Please include the mercury plume at IR-26. Presently, mercury is consistently detected in only one monitoring well; however, the groundwater in this area is not adequately characterized. | • Mercury has been detected in groundwater at IR-26 only at well IR26MW47A as of May 2006 (CE2-Kleinfelder 2006c). New information from newly installed wells IR26MW49A and IR26MW50A will be presented in quarterly groundwater monitoring reports for Parcel B. Narrative descriptions of groundwater data in the TMSRA will be updated to account for samples collected through May 2006. |
| 38. | 3-6 | Page 3-6, Section 3.1.4 Risk Summary for Groundwater. Please identify and discuss groundwater monitoring data where the detection limits have exceeded the human health and ecological screening levels. | • The uncertainty analysis presented in Appendix A (HHRA) will be revised to include a qualitative discussion regarding the potential for risks and hazards to be underestimated as a result of elevated detection limits for some chemicals. No changes are proposed for Section 3.1.4. |

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| 39. | 3-9 | Page 3-9, Section 3.2 Ecological Evaluation. Please identify the dates and quarters of the "12 most recent sampling events". Please update this data with the most recent laboratory certified groundwater data. | • The 12 most recent sampling events used for groundwater data in the risk assessments vary by well and by analyte; there is no single date range that would adequately characterize the groundwater data set. The use of the 12 most recent sampling events was the agreed upon methodology. Section A4.1 on page A-8 of Appendix A describes the groundwater data set. No change to the report is proposed from this comment.<br>• Please refer to the response to EPA specific comment 4 concerning updating the groundwater data set. |
| 40. | 3-9 | Page 3-9, Section 3.2 Ecological Evaluation. Only mercury is identified as a Chemical of Concern for ecological receptors for the groundwater to bay water pathway. Table B-8: "Hazard Quotients for Invertebrate Receptors Based on the Ration of the Detected concentration in Groundwater to Screening Criteria" identifies several chemicals with Hazard Quotients exceeding one, including the following: arsenic (HQ=1.06), copper (HQ=117), lead (HQ=20.4), mercury (HQ=112), nickel (HQ=9.65), silver (HQ=5.53), selenium (HQ=1.04), zinc (HQ=2.47). The maximum concentrations shown on the table for nickel and silver are below their Hunters Point Groundwater Ambient Level (HGAL) therefore these chemicals do not exceed the Hunters Point Screening Level. The Navy has not adequately supported the removal of the metals in groundwater. Please retain these metals, with the exception of silver and nickel, as Chemicals of Concern for ecological receptors in the San Francisco Bay. | • Appendix B of the TMSRA will be expanded to include additional explanation in the text as well as data tables and graphs illustrating the data for the requested chemicals to further support the discussion in the text of Section B5.1.2.3. No change to Section 3.2 of the report is proposed from this comment. |

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| 41. | 3-10 | Page 3-10, Section 3.3 Remediation Goals. Please discuss the Remediation Goal for mercury shown on Table 3-18. DTSC requests that a Remediation Goal is proposed for the protection of human health from inhalation of mercury from groundwater and soil. Please propose ecological protective remediation goals for all metal Contaminants of Concern. | • Please refer to the response to EPA specific comment 21 regarding evaluation of vapor inhalation exposure to mercury in groundwater. The HHRA will be revised to evaluate vapor inhalation exposure to mercury in groundwater. Based on the exposure scenarios associated with the planned reuses of Parcel B, if mercury is identified as a COC in groundwater in the HHRA, then a human health-based remediation goal for mercury will be added to Table 3-18.<br>• Please refer to the response to DTSC specific comment 26 regarding evaluation of exposure to mercury in soil.<br>• Arsenic is the only other metal COC in A-aquifer groundwater (Table 3-18). Arsenic was not retained as a COPEC in the SLERA and so arsenic does not have a remediation goal listed. Arsenic was not retained as a COPEC based on limited frequency of detection. Arsenic was detected only once in the data set at a concentration above the screening criterion (38 µg/L detected versus 36 µg/L screening criterion) and all previous and subsequent samples from the same monitoring well indicated much lower concentrations. No change to Section 3.3 or Table 3-18 of the report is proposed from this comment. |
| 42. | 3-11 | Page 3-11, Section 3.4 Updated Risk Evaluation by Redevelopment Block. Please provide a caveat in the text that explains the limitations of the data in accurately determining risk and that risk is likely underestimated for Redevelopment Blocks with little or no data. | • Please refer to the response to DTSC (Lanphar) specific comment 6. |
| 43. | 3-13 | Page 3-13, Section 3.4.4 Redevelopment Block 4. Although data was not collected within Redevelopment Block 4, risk due to the ubiquitous chemical contaminants is assumed. | • Please refer to the response to DTSC (Lanphar) specific comment 6. |
| 44. | 3-16 | Page 3-16, Section 3.4.10 Redevelopment Block 12. Please update the discussion of the IR-25 groundwater plume based on the conclusions of the groundwater delineation study at RU-C5. | • Please see the response to EPA specific comment 16. The text will be modified as follows. "...chloroform was not detected in the four most recent monitoring rounds (through *May 2006*). *The Navy's recent investigation of VOCs along the boundary between Parcels B and C in this area did not show any additional information that would affect the IR-25 groundwater risk plume at Redevelopment Block 12.*" |

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| 45. | 4-2 | Page 4-2, Section 4.1.1 Remedial Action Objectives for Soil. Please include a Remedial Action Objective for protection of human health from inhalation risk from VOCs and mercury in soil. | • Please refer to the response to DTSC (Lanphar) specific comment 26 concerning inhalation risk from the unsaturated zone. |
| 46. | 4-2 | Page 4-2, Section 4.1.1 Remedial Action Objectives for Soil. The text states that no ecological RAOs were developed for soil at Parcel B; however, ecological RAOs for soil and sediment are presented in the last bullet of page 4-3. | • Please refer to the response to EPA specific comment 41. |
| 47. | 4-2 | Page 4-2, Section 4.1.1.1 Chemicals of Concern in Soil. Because of our understanding of the condition of fill at Hunters Point and the difficulty in meeting remediation goals during earlier remedial action, DTSC request that when a grid presents a potential unacceptable risk overlaps with more than one redevelopment block, the COCs and remediation goals are assigned to all redevelopment blocks and not just the redevelopment block where the samples were collected. | • Remediation goals apply to all grids, independent of redevelopment block. However, the HHRA evaluates soil data based on the grid system; data are not shared or spread across grids and each grid is assigned to only one redevelopment block. Remediation alternatives are developed and evaluated by redevelopment block in the TMSRA to address the fact that some grids are characterized by only a few samples and that some grids contain no samples. The application of the selected remedial action will be supported by additional sampling (for example, confirmation samples from excavations) conducted during the remedial action phase. |
| 48. | 4-5 | Page 4-5, Section 4.1.2.2 Groundwater Remedial Action Objectives for the Protection of Human Health. Please include inhalation risk from mercury in groundwater when discussing Remedial Action Objectives for the vapor intrusion pathway. Because mercury is not adequately characterized at IR-26 and confirmation samples showed mercury at 90 mg/kg at ten feet, mercury is assumed to occur in groundwater in Redevelopment Block 16. | • If mercury is determined to be a COC, the text of the RAO in Section 4.1.2.2 will be revised as follows. "Prevent exposure to VOCs *and mercury* in A-aquifer groundwater above remediation goals via indoor inhalation of vapors from groundwater."<br>• The horizontal extent of mercury in soil to a depth of 10 feet bgs was delineated to the cleanup goal set in the ROD. All soil above the cleanup goal was removed. Excavation of soil above the cleanup goal stopped at 10 feet bgs in accordance with the ROD and ESD. |
| 49. | 4-5 | Page 4-5, Section 4.1.2.3 Groundwater Remedial Action Objectives for the Protection of the Environment. Mercury is the only metal with a remediation goal for the protection of ecological receptors in San Francisco Bay. Please present chemical specific remediation goals that are | • Mercury was the only chemical in groundwater that remained as a COPEC after the refinement step in the SLERA; therefore, it is the only chemical with a remediation goal for groundwater for the protection of the bay.<br>• Please also refer to the response to DTSC (Lanphar) specific comments 40 and 41. |

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| | | protective of San Francisco Bay ecological receptors for all A-aquifer Chemicals of Concern (see table B-8). | • No change to the report is proposed from this comment. |
| 50. | 4-6 | Page 4-6, Section 4.2 Potential Applicable or Relevant and Appropriate Requirements and Appendix C. DTSC believes that its statutes and regulations in general are applicable ARARs. Many state ARARS are listed as the Navy as only relevant and appropriate. | • The Navy requested that DTSC identify potential state ARARs in a letter dated October 21, 2003 and received a response dated December 24, 2003. This request specifically asked for identification of and citations to specific substantive sections and subsections of state laws and regulations as required by the NCP at 40 CFR § 300.400(g)(5). Only specific substantive provisions of statutes and regulations may qualify as ARARs pursuant to CERCLA and the NCP. The state response was more general than requested and required. Nonetheless, the Navy elected to proceed to address the general information provided by the state and has addressed all requirements identified by the state in the TMSRA ARARs analysis. |
| 51. | 4-9 | Page 4-9, Section 4.2.3.1 Potential Action-Specific ARARs for Soil Alternative – Institutional Controls. In this section and elsewhere in the TMSRA the Navy only identifies California Code of Regulations section 67391.1(e)(1) as an ARAR. First, the regulation should be cited in its entirety. Additionally, Civil Code section 1471, and Health and Safety Code sections 25202.5, 25221.1, 25355.5(a)(1)(C), 25233(c) and 25234 should be listed as ARARs. | • The text of Section 4.2.3.1 will be revised identify Cal. Code Regs. Tit. 22, § 67391.1(a) and (e)(1) as the potential state ARAR. Similar changes will be made in Appendix C at Section C4.1.2.2 and Table C-6.<br>• The text of Section 4.2.3.1 will be revised to identify California Civil Code § 1471 and California Health and Safety Code §§ 25202.5, 25355.5(a)(1)(C), 25233(c), and 25234 as potential state ARARs for institutional controls. Similar changes will be made in Appendix C at Section C4.1.2.2 and Table C-6. |
| 52. | 4-14 | Page 4-14, Section 4.3.1 Development of General Response Action – Groundwater. Removal is identified as a potential response action; however, only pumping is identified as a method. Please add source removal as another method for consideration. DTSC request that the removal of mercury remaining in soil below 10 feet (concentrations as much as 90 mg/kg in composite samples) be evaluated and retained as a remedial alternative. | • Mercury source removal has been added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. |
| 53. | 4-15 | Page 4-15, Section 4.3.2.1 Evaluation of Applicable Soil Process Options, Institutional Controls. The first sentence is misleading or at least only partially representative of the | • The text describing institutional controls in Section 4.3.2.1 starting at the bottom of page 4-15 will be revised as follows. "Institutional controls are legal and administrative |

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| | | applicability of ICs. ICs are often put in place as a permanent remedy to address contaminants left in place at a site at levels that do not allow unrestricted use. Those ICs will remain until someone conducts further remediation or can support that they are no longer needed due to the absence of contamination for some reason (e.g. natural attenuation, etc.) otherwise they will remain in place forever. Therefore, this sentence should be expanded to reflect that ICs could remain in place where remediation is complete and goals met, but only to levels that require ICs. | mechanisms used to implement land use and access restrictions that are used to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances *present on the property* to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved, *and to assure containment of hazardous substances remaining on the property in vapors, soils, or contaminated groundwater after remedial actions have been taken. Institutional controls may remain on a property even after remediation goals have been met in cases where those goals were selected at levels that accounted for the application of institutional controls. Institutional controls may remain in place unless the remedial action taken would allow for unrestricted use of the property.* Monitoring and inspections are conducted..."<br>• Proposed revised text for Section 4.3.2.1 discussing institutional controls is included as Attachment 2 to these responses. |
| 54. | 4-18 | Page 4-18, Section 4.3.2.1 Evaluation of Applicable Soil Process Options, Institutional Controls - Restricted Land Uses. This section should be re-written to indicate that the property can not be used for any of the restricted uses without seeking the approval of the Navy and DTSC per the requirements in their respective documents, the Quitclaim Deed(s) and the Covenant to Restrict Use of Property. DTSC has specific statutory requirements for granting variances, modifications, or terminations of restrictions in a Covenant to Restrict Use of Property. | • The text on page 4-16 in the following paragraph addresses the need for future transferees to seek approval from DTSC and the Navy.<br>"The 'Covenant to Restrict Use of Property' will incorporate the land use restrictions into environmental restrictive covenants that run with the land and that are enforceable by DTSC against future transferees. The Quitclaim Deed(s) will include the identical land use restrictions in environmental restrictive covenants that run with the land and that are enforceable by the Navy against future transferees.<br>• This paragraph will be expanded by the addition of the following text which was included in the Navy's August 9, 2006 redraft of this section developed in consultation with DTSC and EPA counsel.<br>*"The 'Covenant(s) to Restrict Use of Property' and Deed(s) shall provide that a Parcel B Risk Management Plan ('Parcel B RMP') shall be prepared by the City of San Francisco and approved by the Navy and the FFA Signatories. The Parcel B RMP shall be discussed in the Parcel B ROD Amendment and shall be attached to and incorporated by reference into the Covenant(s) to Restrict Use of Property and Deed(s) as an enforceable part thereof. It shall specify soil and groundwater management procedures for compliance with the remedy selected in the Parcel B ROD Amendment. The Parcel B RMP shall identify the roles of local, state, and federal government in administering the Parcel B* |

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| | | | *RMP and shall include, but not be limited to, procedures for any necessary sampling and analysis requirements, worker health and safety requirements, and any necessary site-specific construction and/or use approvals that may be required.*" |
| 55. | 4-18 | Page 4-18, Section 4.3.2.1 Evaluation of Applicable Soil Process Options, Institutional Controls, Restricted Activities. Please clarify that soil containment applies to all of Parcel B and is not limited to 'debris fill area cap/containment systems'. | • The revised language in Section 4.3.2.1, which was included in the Navy's August 9, 2006 redraft of this section developed in consultation with DTSC and EPA counsel, will be revised as follows: "...revetment walls and shoreline protection, and ~~debris fill area~~ cap/containment systems); groundwater extraction..." |
| 56. | 4-19 | Page 4-19, Section 4.3.2.1 Evaluation of Applicable Soil Process Options, Removal. The explanation of the occurrence of ubiquitous metal contamination at concentrations above the HPALs, especially for arsenic and manganese is well stated. This type of explanation is needed earlier in the document and in the executive summary. Please add in the text that the ubiquitous metal contamination at concentrations above the HPALs is not considered ambient or naturally occurring. | • Please refer to the response to EPA specific comments 1 and 5. |
| 57. | 4-19 | Page 4-19, Section 4.3.2.1 Evaluation of Applicable Soil Process Options, Containment.<br>a. Please emphasize that the Navy's soil covers are interim and temporary and would be replaced or altered during redevelopment.<br>b. Please add to the text the statement that soil cover would apply to all of Parcel B and not just Redevelopment Blocks with data showing an unacceptable health risk.<br>c. Please include the concrete and wooden sea walls along the Parcel B shore as existing containment systems.<br>d. Please evaluate the condition of the seawalls for effectiveness and durability in containing contaminated soil found at Parcel B. | • (a) While the covers installed by the Navy may be modified during redevelopment, the soil covers in Alternatives S-4 and S-5 are intended to be permanent and will prevent exposure to soil contamination. If soil covers are damaged or modified during redevelopment, they must be repaired or replaced.<br>• (b) The second bullet on page 4-20 will be replaced with the following text.<br>"*Where covers are needed, areas will be covered with a durable material that will not break, erode, or deteriorate such that the underlying soil becomes exposed. Standard construction practices for roads, sidewalks, and buildings would likely be adequate to meet this performance standard. Other examples of covers could include a minimum 4 inches of asphalt, a minimum 2 feet of clean imported soil, and maintained landscaping. All covers must achieve a full cover over the entire redevelopment block. The exact nature and specifications for covers can vary from block to block, but all covers must meet the performance standard of preventing exposure to soil and being durable.*" |

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| | | e. Please discuss whether current landscaped areas provide adequate containment for soil contaminants. If not, please describe acceptable interim landscape containment systems. | • (c) The concrete and wooden sea walls are not considered part of the permanent remedy. The Navy plans to maintain the revetment walls at IR-07 and IR-26 because they are part of the containment remedy. Sea walls at other locations in Parcel B hold back fill soil. Responsibility for these sea walls will be transferred to the SFRA and are not considered part of the CERCLA remedy.<br>• (d) Soil contamination has been removed, to the extent practicable, adjacent to the sea walls by previous excavations (TPA-CKY 2005, Tetra Tech 2002a). Upon transfer, these structures and responsibility for their integrity will be transferred to the SFRA.<br>• (e) Please refer to the response to item (b). |
| 58. | 4-23 | Page 4-23, Section 4.3.2.2 Evaluation of Applicable Groundwater Process Options – Passive Groundwater Treatment. Passive groundwater treatment may be appropriate for volatile organic compounds (VOCs) since this is essentially biologic treatment using the native microorganisms that have been shown to exist at Hunters Point Shipyard through Treatability Studies. However, passive groundwater treatment is likely not appropriate for Mercury. The following is excerpted from the Commission on Geosciences, Environment and Resources, 2000, "Natural Attenuation for Groundwater Remediation", page 103.<br>*Mercury is sometimes present in soils and sediments at contaminated sites in the form of mercuric ion, Hg(II), elemental mercury, Hg(0), and the biomagnification-prone organic mercury compounds monomethyl- and dimethylmercury (both of which can accumulate at hazardous levels in the food chain). All microbial transformations of mercury are detoxification reactions that microbes use to mobilize mercury away from themselves (Barkay and Olson, 1986). Most reactions are enzymatic, carried out by aerobes and anaerobes, and* | • The referenced report excerpt does not address the attenuation of mercury by humic substances and other organic matter in soil and groundwater. This process is discussed in EPA's Mercury Study Report to Congress Volume III, Fate and Transport of Mercury in the Environment (EPA 1997), which states (p. 2-11): "Soil conditions (e.g., pH, temperature and soil humic content) are typically favorable for the formation of inorganic Hg(II) compounds such as HgCl, Hg(OH) and inorganic Hg(II) compounds complexed with organic anions. Although inorganic Hg(II) compounds are quite soluble (and, thus, theoretically mobile) they form complexes with soil organic matter (mainly fulvic and humic acids) and mineral colloids; the former is the dominating process. This is due largely to the affinity of Hg(II) and its inorganic compounds for sulfur-containing functional groups." Clay minerals and iron oxides can also adsorb mercury species in soils of neutral or near neutral pH. Although methylmercury can also be formed in soil through microbial action on Hg(II) species, it will also be largely bound to organic matter. Appendix B of EPA's Mercury Study report goes on to present fate and transport parameters for mercury species in soil and water. Soil/water partition coefficients (Kd) ranging from 24,000 to 270,000 mL/g were calculated for Hg(II) species, and Kd's ranging from 2,700 to 31,000 mL/g were calculated for methylmercury. In addition, a Henry's Law constant of 7.1E-10 atm-$m^3$/mol was presented for Hg(II) species and of 4.7E-7 atm-$m^3$/mol for methylmercury.<br>• The size of the Kd's for the likely mercury species present in soil and groundwater at the site indicates a preference for sorption to soil. Thus, with removal of the source materials through excavation, it is likely that remaining Hg species dissolved in groundwater would attenuate through sorption into soil over time. Moreover, the very low Henry's Law |

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| | | *involve uptake of Hg(II) followed by reduction of Hg(II) to volatile forms (elemental Hg(0) and methyl- and dimethylmercury) or the formation of highly insoluble precipitates with sulfide. In general, natural attenuation based on microbial mercury reduction and volatilization seems implausible because the volatile forms remain mobile, although immobilization as Hg(II) sulfides may be possible if the electron donors needed to sustain the microbial production of enzymes and the sulfate needed for precipitation are present together.*<br>Please remove Passive Groundwater Treatment as a Groundwater Process Option for mercury in groundwater. | constants show that the predominant dissolved mercury species are unlikely to volatilize from groundwater at concentrations that would pose risks to potential soil vapor receptors. It is for these reasons that groundwater monitoring was proposed as a groundwater process option for mercury in groundwater. As referenced in DTSC's comment, some mobile mercury would remain in groundwater and soil vapor due to complexation of Hg by dissolved organic carbon species and through microbial reduction of Hg compounds to elemental Hg(0). However, these mobile species would be predicted to amount to a small fraction of the total Hg present in the aquifer, which is already small (2.8 µg/L or less).<br>• No change to the report is proposed from this comment. |
| 59. | 4-23 | Page 4-23, Section 4.3.2.2 Evaluation of Applicable Groundwater Process Options. Please include source removal of mercury in soil below 10 feet (concentrations as much as 90 mg/kg in composite samples) as an applicable groundwater process option. DTSC requests that the removal of mercury remaining in soil be evaluated and retained as a remedial alternative. | • Mercury source removal has been added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. |
| 60. | --- | Table 4-2: Screening of General Response Actions and Process Options for Groundwater, Page 1 of 6. Please identify the appropriate Contaminants of Concern (COCs) that Passive Treatment is being considered for. This process option may be effective for Volatile Organic Compounds but not for mercury and other metals. Please modify screening comments to reflect this. | • Please refer to the response to DTSC (Lanphar) specific comment 58 and EPA specific comment 61 for a discussion of mercury. |
| 61. | 5-2 & 5-5 | Pages 5-2 and 5-5, Sections 5.1.1 and 5.2.2: Alternative S-2: Institutional Controls and Shoreline Revetment.<br>a. DTSC agrees that institutional controls should be implemented parcel wide.<br>b. The present concrete and wooden sea wall at parcel B currently serves a similar purpose as the proposed | • (a) Comment acknowledged; no response necessary.<br>• (b) The following text will be added to the description of Alternative S-2 on page 5-2. "*Institutional controls will be implemented to maintain the integrity of the shoreline revetment at Parcel B.*" Please refer to the response to DTSC (Lanphar) specific comment 57 for additional discussion of sea walls. |

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| | | revetment wall would serve. Please include the maintenance of the sea wall as an institutional control in Alternative S-2.<br>c. Do implementation costs estimates for Institutional Controls include long term regulatory oversight by DTSC or other agencies? If not, please include oversight costs.<br>d. On Page 5-6 the discussion of Alternative S-3 (third bullet) states that the removal and disposal 6,000 cubic yards of contaminated sediment is part of the revetment wall element of the alternative. Please discuss the soil removal aspect of the revetment alternative in Alternative S-2. | • (c) The Navy continues to discuss this policy issue internally. The draft final TMSRA will be revised accordingly after the issue is resolved.<br>• (d) Please refer to the response to EPA specific comment 45. The third bullet on Page 5-6 will be revised with the following text: "...includes disposal of 6,000 cubic yards of ~~contaminated~~ sediment *to establish appropriate grades and to allow placement of erosion control materials at appropriate elevations relative to sea level.*" |
| 62. | 5-3 & 5-7 | Pages 5-3 and 5-7, Sections 5.1.1 and 5.2.2: Alternative S-4: Covers, Methane Source Removal, Institutional Controls and Shoreline Revetment.<br>a. Please apply the cover alternative to the entire Parcel B. Ubiquitous metal COCs that exceed remediation goals are expected to occur within all redevelopment blocks, even those with insufficient or no data.<br>b. Please rewrite the second paragraph on page 5-7 to state that based on the HHRA and the ubiquitous nature of some metal COCs all redevelopment blocks require covers.<br>c. DTSC is not able to concur that existing covers are adequate for blocks 1, 4, 5, and 16. Please schedule a BCT site walk to evaluate existing cover and determine where new covers are required. Review of air photos show distressed vegetative soil covers in Redevelopment Blocks 1, 4, 5, and 16. | • (a) While ubiquitous metals may pose unacceptable risk in areas that are currently not represented by sample data, it would be incorrect to assume this is always the case. Nevertheless, the Navy proposes to address all areas at Parcel B in the alternatives, although risk has not been quantified as occurring above background levels in all redevelopment blocks. The remedies will be protective of potential exposure to ubiquitous metals that may pose unacceptable risk.<br>• (b) The second paragraph on page 5-7 will be replaced as follows: "*Covers will be required at all redevelopment blocks to prevent human exposure to ubiquitous metals in soil that may pose an unacceptable risk.*"<br>• (c) Navy conducted a site walk on August 12, 2006 to observe the covers and determined that, because of storm drain and sanitary sewer removal activities, Parcel B covers will need re-evaluation after these removal activities are completed. A site walk with the BCT will be scheduled at that time. |

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| 63. | 5-8 | Page 5-8, Section 5.3.2 Alternative GW-2: Long-Term Groundwater Monitoring and Institutional Controls. DTSC does not support passive treatment and long term monitoring of mercury as a groundwater remedy. Further, as stated in an earlier comment, DTSC does not agree with the list of Chemicals of Concern identified in Section 3.0. Long-term monitoring of metals currently included in the Parcel B Remedial Action Monitoring Program may be part of an appropriate groundwater remedy; however, these metals are not currently identified as Chemicals of Concern. | • Please refer to the response to DTSC (Lanphar) specific comments 40 and 41 regarding the determination of COCs. The groundwater monitoring program will focus on COCs.<br>• Please refer to the responses to DTSC (Lanphar) specific comment 58 and EPA comment 61 for discussion on groundwater monitoring for mercury. |
| 64. | 5-8 | Page 5-8, Section 5.3.2 Alternative GW-2: Long-Term Groundwater Monitoring and Institutional Controls. As stated in an earlier comment, natural groundwater recovery is not appropriate for mercury contaminated groundwater. The mercury plume is adjacent to the bay and is not completely characterized. DTSC requests that the TMSRA includes mercury source removal as a groundwater alternative. Please include groundwater monitoring after source removal to determine if cleanup levels have been achieved. Two or more additional monitoring wells will be needed to complete a monitoring network for the mercury plume. | • Mercury source removal and three additional groundwater monitoring wells have been added to Alternatives S-3, S-4, and S-5. The Navy has installed two new groundwater monitoring wells in the area near well IR26MW47A. A third well will be installed within the area of Excavation EE-05 after selection of the final remedy and completion of the mercury source removal. Please refer to the response to EPA specific comment 59. |
| 65. | 6-5 | Page 6-5, Section 6.1.2.1 Overall Protection of Human Health and the Environment: Alternative S-2. Alternative S-2 is not fully protective of human health and the environment because it does not consider the existing sea walls. Including the maintenance of the sea wall in the institutional controls would increase the protectiveness of this alternative. | • Please refer to the response to DTSC (Lanphar) specific comments 57 and 61. |

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| 66. | 6-5 | Page 6-5, Section 6.1.2.2 Compliance with ARARs: Alternative S-2. This alternative includes a revetment wall that is proposed along the shoreline and within the jurisdiction of the Bay Conservation and Development Commission (BCDC). Please include BCDC ARARs prior to making this determination. This comment applies to all soil alternatives that include the revetment wall. | • The Navy has already identified the San Francisco Bay Plan at Cal. Code Regs. Tit. 14, §§ 10110 through 11990 as potential state location-specific ARARs (for example, see Table C-4). No change to the report is proposed from this comment. |
| 67. | 6-5 | Page 6-5, Section 6.1.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment: Alternative S-2. The text states that Alternative S-2 would not reduce the toxicity or volume of hazardous substances because soil would not be treated or removed. However, on page 5-6 the discussion of Alternative S-3 (third bullet) states that the removal and disposal 6,000 cubic yards of contaminated sediment is part of the revetment wall element of the alternative. Please modify this analysis section accordingly. | • The rating of Alternative S-2 will be changed to "poor" based on EPA specific comment 66. |
| 68. | 6-5 | Page 6-5, Section 6.1.2.3 Long-Term Effectiveness: Alternative S-2. The discussion of long-term effectiveness does not consider the need to support reuse of Parcel B. Please discuss in this section how this alternative would support reuse and the continued long-term protection of future residents, visitors and workers. This alternative does not include maintenance of soil covers and therefore does not protect future residents, visitors and workers from exposure to contaminated soil. DTSC's conclusion is that the overall rating for Alternative S-2 for long-term effectiveness is poor. Please change the rating of this criterion 'good' to 'poor'. | • Alternative S-2 would effectively prevent human exposure to COCs through institutional controls. If existing covers are not adequate to prevent exposure, access to those areas would be restricted under Alternative S-2. No change to the report is proposed from this comment. |

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| 69. | 6-6 | Page 6-6, Section 6.1.2.5 Short-Term Effectiveness: Alternative S-2. Please evaluate the short-term impacts of this alternative on the artists that are now located within Redevelopment Block B-4. Although no sampling occurred within this redevelopment block, ubiquitous metal contaminants of concern are likely present within this area. The buildings within the Redevelopment Block are surrounded with landscaped areas. The condition of this landscaping and its effectiveness in blocking contaminant pathways has not been evaluated. This alternative would not require maintenance of any cover in this area and erecting fencing may not be suitable as a remedy. DTSC's conclusion is that the overall rating for Alternative S-2 for short-term effectiveness is poor. Please change the rating of this criterion 'very good' to 'poor'. | • Alternative S-2 would effectively prevent human exposure to COCs through institutional controls. Access will be restricted in areas where existing covers are not adequate to prevent exposure. The rating for Alternative S-2 for short-term effectiveness will be changed to good. |
| 70. | 6-7 | Page 6-7, Section 6.1.2.8 Overall Rating: Alternative S-2. Because of the issues identified in the above comments, please change the Overall Rating of S-2 from 'good' to 'poor'. | • Please refer to the responses to DTSC (Lanphar) specific comments 67, 68, and 69. |
| 71. | 6-7 | Page 6-7, Section 6.1.3 Individual Analysis of Alternative S-3. Alternative S-3 does not include the enhancement and maintenance of existing covers or the establishment of new covers; therefore, similar issues exist with Alternative S-3 as were identified by DTSC with Alternative S-2. Please change the ratings for Long-Term Effectiveness, Short-Term Effectiveness and Overall Rating from 'very good' to 'poor'. | • Please refer to the response to DTSC (Lanphar) specific comment 68. |

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| 72. | 6-10 | Page 6-10, Section 6.1.4.1 Overall Protection of Human Health and the Environment: Alternative S-4. Please change this alternative to include covers over the entire Parcel B. Limiting the covers to Redevelopment Blocks where there is an unacceptable incremental risk limits the overall protection of human health and the environment. As currently written the alternative would not protect human health and the environment from the ubiquitous COCs that are found parcel-wide. Some redevelopment blocks have no data or insufficient data to support a risk assessment and the identification of incremental risks. Please change to rating for Overall Protection of Human Health and the Environment to 'not-protective'. If covers are required for the entire parcel, then the rating for this criterion could change to 'protective'. | • Section 6.1.4 will be revised as follows: "Alternative S-4 includes (1) *covers over all redevelopment blocks to prevent human exposure to ubiquitous metals that may pose an unacceptable risk,* (2)...<br>• Section 6.1.4.1 will be revised with the following text: "Alternative S-4 provides protection ...based on future land use *and soil with ubiquitous metals* would be covered. These covers..." |
| 73. | 6-10 | Page 6-10, Section 6.1.4.3 Long-Term Effectiveness: Alternative S-4. As currently written this alternative only requires covers for Redevelopment Blocks where there is an unacceptable incremental risk. Therefore, several Redevelopment Blocks, including RD-4 would not have a cover. Institutional controls would not require maintenance of covers in these redevelopment blocks. Therefore this alternative does not protect future residents, visitors and workers from ubiquitous Chemicals of Concern. Please change this alternative to include covers over the entire Parcel B. If the Alternative remains unchanged, please change to rating for Overall Protection of Human Health and the Environment from 'very good' to 'poor'. If covers are required for the entire parcel, then the rating for this criterion should stay as 'very good'. | • Section 6.1.4.3 will be modified as follows: "The factors evaluated...Under Alternative S-4, risks associated with exposure to COCs *and ubiquitous metals* in soil are mitigated by covering the soil. *The Navy proposes to use covers over all redevelopment blocks (informally termed 'full lot coverage').* As a result..." |

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| 74. | 6-11 | Page 6-11, Section 6.1.4.5 Short-Term Effectiveness: Alternative S-4. As currently written this alternative only requires covers for Redevelopment Blocks where there is an unacceptable incremental risk. Therefore, several Redevelopment Blocks, including RD-4 would not have a cover. Buildings on RD-4 house the artist tenants at Hunters Point. The artist may not be protected from ubiquitous contaminants of concern in the short term if covers in RD-4 are not established or maintained. Although covers would not be required in this alternative, some covers currently exist within RD-4. Please change the overall rating for this criterion from 'very good' to 'good'. | • The Navy proposes to cover all areas at Parcel B and these covers will be protective of potential exposure to ubiquitous metals that may pose unacceptable risk. No change is necessary in Section 6.1.4.5 based on this comment. |
| 75. | 6-12 | Page 6-12, Section 6.1.5 Individual Analysis of Alternative. The above comments on the soil cover being limited to Redevelopment Blocks where there is an unacceptable incremental risk also apply to Alternative S-5. Please modify this section accordingly. | • Section 6.1.5 will be revised as follows: "Alternative S-5 combines... and lead that pose a potential unacceptable risk and *covers over all redevelopment blocks to prevent human exposure to ubiquitous metals that may pose an unacceptable risk."*<br>• Section 6.1.5.1 will be revised with the following text: "Alternative S-5 provides ...and all other soils *parcel-wide would be covered.* Institutional controls ..." |
| 76. | 6-20 | Page 6-20, Section 6.3.2.1 Overall Protection of Human Health and the Environment: Alternative GW-2. DTSC does not concur that this alternative is protective of Human Health and the Environment. Natural recovery or passive treatment is not appropriate for mercury contaminated groundwater. Please change the conclusion for this criterion from 'protective' to 'not-protective'. | • Please refer to the responses to DTSC (Lanphar) specific comment 58 and EPA specific comment 61. No change to the rating is proposed from this comment. |
| 77. | 6-20 | Page 6-20, Section 6.3.2.2 Compliance with ARARs: Alternative GW-2. The text states that no Chemical Specific ARARs are pertinent to Alternative GW-2 because no active treatment or removal of groundwater is proposed. This alternative proposes groundwater monitoring and passive treatment. Remediation goals are | • The value for mercury from Table 3-3 of the Basin Plan is identified on Table 3-18 as a chemical-specific ARAR for groundwater. Chapter 3 of the Basin Plan is discussed as a chemical-specific ARAR in Section 4.2. The first sentence of the discussion of the compliance of Alternative GW-2 with ARARs will be replaced with the following. *"Chemical-specific ARARs pertinent to Alternative GW-2 would be met through removal* |

**TABLE 2: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | necessary for passive treatment; otherwise one would not know if passive treatment is successful. However, the Navy does identify Chemical Specific ARARs for the protection of San Francisco Bay on Table 3-18. Please discuss the compliance of this alternative with chemical specific ARARs of the Bay Area Regional Water Quality Control Board. | *of the mercury source and subsequent groundwater monitoring.*" |
| 78. | 6-20 | Page 6-20, Section 6.3.2.3 Long-Term Effectiveness and Permanence: Alternative GW-2. This alternative incorrectly assumes that mercury contaminated groundwater can be passively treated and does not include the removal of the source of mercury contaminated groundwater. Therefore, DTSC requests that the conclusion of criterion be changed from 'good' to 'poor'. | • Please refer to the responses to DTSC (Lanphar) specific comment 58 and EPA specific comment 61.<br>• Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. |
| 79. | 6-20 | Page 6-20, Section 6.3.2.4 Reduction of Toxicity, Mobility or Volume: Alternative GW-2. DTSC agrees with the Navy's conclusion that the overall rating for this criterion is poor. An additional reason for this conclusion is the leaving of mercury in soil at 10 feet below ground surface at 90 mg/kg. This mercury is a likely source for mercury in groundwater at IR-26. | • Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. |
| 80. | 6-21 | Page 6-21, Section 6.3.2.5 Short-Term Effectiveness: Alternative GW-2. DTSC agrees that Institutional Controls for the protection of human health would be effective in the short-term. This alternative, however, does not address ongoing releases to the San Francisco Bay. Mercury at IR-26 has not been adequately characterized and mercury sources are still present in the soil at 10 feet below ground surface. Please change the conclusion of this criterion from 'excellent' to 'poor'. | • Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59. |

**TABLE 2: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 81. | 6-22 | Page 6-22, Section 6.3.2.8 Overall Rating: Alternative GW-2. DTSC does not agree with the Navy's overall rating for Alternative GW-2. This alternative leaves a mercury source of groundwater contamination in place, and therefore is neither effective in the short nor long term. Please change the overall rating for this alternative from 'good' to 'poor'. | • Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59.<br>• Concentrations of mercury in groundwater will be monitored by Alternative GW-2. Please refer to the responses to DTSC (Lanphar) specific comment 58 and EPA specific comment 61. |
| 82. | 6-22 | Page 6-22, Section 6.3.3 Individual Analysis of Alternative GW-3A and –3B. The description of this alternative in Section 5 states that the monitoring and institutional control elements of GW-2 are included in this alternative as well. The text in Section 6.3.3 states that monitoring in this alternative would occur over for significantly less time. This alternative includes groundwater monitoring and in situ treatment of VOC plums but it does not state whether passive treatment of mercury in groundwater at IR-26 is also included. Please clarify. If passive treatment is envisioned by Alternative 3-A and 3-B, then DTSC comments on Section 6.3.2 also apply. If mercury in groundwater is not considered by this alternative than a major groundwater concern is not being addressed and Alternative 3-2 and 3-B will not be able to meet threshold criteria. | • Alternatives GW-3A and GW-3B include monitoring groundwater. Please refer to the response to EPA specific comment 59 for changes to Section 6.3.3.<br>• Please refer to responses to DTSC (Lanphar) specific comment 58 and EPA specific comment 61 for discussion on the monitoring of mercury in groundwater. |
| 83. | 6-22 | Page 6-22, Section 6.3.3 Individual Analysis of Alternative GW-3A and –3B. DTSC supports the inclusion and evaluation of in situ groundwater remediation. Clean up goals for the protection of human health, through the inhalation pathway, and of aquatic receptors in the San Francisco Bay are needed to determine whether this alternative meets the threshold criteria. | • The TMSRA identifies remediation goals in Section 3.0 for groundwater in conjunction with the results of the risk assessments to target areas in groundwater that may require remediation.<br>• The first full paragraph of Section 5.3.2 on page 5-9 will be revised as follows. "Groundwater in the A-aquifer would be monitored where concentrations of metals and VOCs are detected *above remediation goals*. The general objectives for groundwater monitoring…adjust the data collection and analysis requirements, and evaluate the need for other response actions. *Groundwater monitoring would continue until remediation goals are met.*" |

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| 84. | 6-25 | Page 6-25, Section 6.4 Comparison of Groundwater Remedial Alternatives. DTSC does not agree that Alternatives GW-2, GW-3A and -3B meet the threshold criteria and are protective of human health and the environment.<br>These alternatives have not adequately address mercury at IR-26 because the source of mercury in groundwater is not considered nor is the inhalation pathway for mercury evaluated. The removal of several metals as groundwater Chemicals of Concern has not been adequately supported. DTSC request that the groundwater monitoring alternative include the continuation of groundwater monitoring for several metals and VOCs along the Parcel B shoreline. *Reasons: concerns over groundwater data quality, wells not in proper places (gap along IR-20/IR-26).* | • Inhalation exposure to mercury will be evaluated for each plume-based and nonplume-based exposure area where mercury is detected in groundwater. Please refer to the response to EPA specific comment 21.<br>• Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59.<br>• Please refer to the response to DTSC (Lanphar) comments 40 and 41 regarding the development of COCs. |
| **Additional Comments (dated September 1, 2006)** | | | |
| 1. | | Soil Vapor Remedial Action Objectives, Goals, and Alternatives. In our original comments on the draft TMSRA DTSC requested soil gas Remedial Action Objectives (RAOs) for the protection of human health from the inhalation of VOCs and mercury. The establishment of RAOs for soil vapor implies that remedial alternatives be developed. DTSC wishes to clarify the need for Remedial Action Goals (RAGs) and soil remedial alternatives that address methane, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and mercury. Please establish remedial alternatives for soil gas sites with VOCs, mercury and methane in the soil or groundwater including: IR07 and IR18; IR10; the Parcel B/C boundary area<br>near IR06 and IR25; IR20, and IR26. Please apply RAOs and RAGs to areas overlying total petroleum hydrocarbon | • Section 4.1.2.2 on page 4-5 contains the RAO for protection of human health for exposure to VOCs via inhalation. The Navy will evaluate the potential risk to human health from exposure to mercury via inhalation (see response to EPA specific comment 21). If mercury is found to pose unacceptable risk via inhalation, an RAO will be added to Section 4.1.<br>• Section 4.1.1.2 on page 4-3 contains the RAO and remediation goal for methane.<br>• The TMSRA includes remediation alternatives to address exposure to VOC vapors and methane, and will be updated to incorporate alternatives for mercury vapor if it is determined to pose unacceptable risk. Other compounds listed in the comment (SVOCs, PAHs, and TPH) were not found to pose unacceptable risk via inhalation and, therefore, do not have corresponding RAOs or remediation alternatives. TPH that is not commingled with CERCLA-regulated substances is not addressed in the TMSRA, but is, instead, addressed by the Navy's corrective action program for TPH. A revised corrective action plan for TPH at Parcel B is currently being prepared. |

**TABLE 2: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | (TPH) and semi-VOCs (or polynuclear aromatic hydrocarbon (PAHs)) contamination (e.g. if naphthalene is present).<br><br>The list of COCs for soil on Table 3-17 does not include all VOCs that are of concern, including daughter products of VOCs, such as vinyl chloride (VC) and dichloroethene (DCE). Please include these as COCs for soil. Please include a table similar to Table 3-17 for COCs in soil gas and please include risk based screening levels for soil gas, ambient air and indoor air. | • The Navy proposes to implement institutional controls for vapor intrusion across all of Parcel B based on ease and efficiency of implementation, consistency in long-term enforcement, and effectiveness of long-term maintenance. These institutional controls will eliminate potential exposure via vapor intrusion, whether the source of the vapor is soil or groundwater. Also refer to the response to additional comment 3, below.<br><br>• Exposure to VOCs via inhalation was evaluated based on vapor intrusion from groundwater; consequently, vinyl chloride and cis- and trans-1,2-dichloroethene are listed as COCs on Table 3-18, not Table 3-17. |
| 2. | | Methane. The removal of the methane source and post removal monitoring is proposed for sites 7 and 18 and DTSC agrees with this proposal. Navy's soil gas investigation of the site also identified the presence of VOCs in soil gas. The remedial alternative for sites 7 and 18 should also consider continued monitoring of VOCs as well as the removal or control of residual soil gas. Engineering controls for soil gas mitigation may be necessary for portions (Blocks 1, 2 and 3) of sites 7 and 18 where future mixed use or research and development reuse is specified.<br><br>Further, the 5 percent Remedial Action Goal for methane is based on California Regulations for the control of methane within and at the boundary of landfills. Five percent (5%) is approximately the lower explosive limit (LEL: 53,000 ppmv) of methane. DTSC's approach to methane is outlined in Advisory on Methane Assessment and Common Remedies at School Sites (Advisory), June 16, 2005). The Advisory comprises detailed recommendations for investigation, remediation, and monitoring. Although developed for school sites, the Advisory is useful for all sites with methane | • Vapor controls are proposed parcel-wide as part of the institutional controls discussed in Section 4.3.2.1. Monitoring of methane or VOCs may be required as part of the vapor controls if structures are built above areas with residual methane or VOC contamination. Vapor control and vapor monitoring details will be summarized in the RMP.<br><br>• The cited advisory on methane assessment is not promulgated or enforceable; consequently, remediation goals cannot be based upon it. However, the Navy will consider the information in this advisory during the remedial design to help identify appropriate soil gas monitoring requirements to be implemented during and following the methane source removal.<br><br>• No change to the report is proposed from this comment. |

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| | | contamination. The following recommendations with respect to remedial action objectives for methane are derived from the Advisory.<br><br>a) Prevent methane in soil gas above a concentration of 0.5% (5,000 ppmv) (with a detection limit of 500 ppmv) from accumulating under proposed or current structures. Methane will migrate in response to both concentration and pressure gradients: therefore, the RAO should be stated in terms of pressures as well as concentrations (i.e., prevent methane at pressures above 0.5 pounds per square inch (psi), from accumulating under proposed or current structures).<br><br>b) Remove or treat soils containing methane at 5,000 ppmv or above.<br><br>c) Where subsurface methane levels are above 1,000 ppmv under proposed or current structures, propose an active or passive venting system. | |
| 3. | | Contaminants of Concern. Currently, chemicals of concern (COCs) are specific to redevelopment blocks. This is appropriate for risk assessment, because in a risk assessment COCs are identified using detected contaminants. However, because of the current understanding of contamination at Hunters Point and the uncharacterized nature of many redevelopment blocks, limiting chemicals of concern to the redevelopment block is not appropriate for contaminants that may be of concern parcel wide. Parcel wide chemicals of concern are needed to support a parcel wide soil cover and for future redevelopment risk management plans. Please produce a list of parcel wide chemicals of concern and a corresponding list of parcel wide remediation goals. | • Chemicals of concern are identified for each exposure area in the HHRA. For Parcel B, exposure areas are defined using a grid for residential and industrial exposures, and COCs are, therefore identified by grid cell. Exposures and COCs are not evaluated on a redevelopment block or parcel-wide basis. COCs are summarized for presentation in the tables in Section 3.0 by redevelopment block for ease of reference, but the selection of COCs is done at the grid level.<br><br>• No change to the report is proposed from this comment. |

**TABLE 2: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 4. | | Groundwater Vapor Intrusion Risks and Engineering Controls. In the discussion of Alternative GW-2: Long-Term Groundwater Monitoring and Institutional Controls the Navy states, "Institutional Controls would be in place to prohibit occupancy of buildings or other enclosures where there is potential unacceptable risk from the vapor intrusion pathway and require engineering controls on all new buildings constructed in redevelopment blocks where groundwater plumes may present potential unacceptable risk from vapor intrusion pathway." This statement implies that engineering controls would be required for all new buildings within the entire redevelopment block and not just for those buildings situated above groundwater plumes or the plumes buffer zone. Figure A-8 shows the potential lateral extent of groundwater vapor intrusion, while Figure 3-8 shows only the affected grid. Please clarify that a redevelopment block will require Institutional Controls and Engineering Controls if the potential lateral extent of vapor intrusion extends into that redevelopment block. Engineering Controls may not be necessary if the Navy can show through groundwater and soil vapor sampling that a vapor intrusion risk is not present.<br><br>Please explain the Engineering Controls required for existing buildings that are in affected redevelopment blocks and will be reused as part of the redevelopment. | • The description of Alternative GW-2 on page 5-9 will be revised as follows.<br><br>• "Institutional controls are part of Alternative GW-2 and are described in detail in Section 4.3. Institutional controls would be in place to prohibit occupancy of buildings or other enclosures where there is potential unacceptable risk from the vapor intrusion pathway and require engineering controls on all new buildings *occupied* in redevelopment blocks where groundwater plumes may present potential unacceptable risk from the vapor intrusion pathway. *Institutional controls will be required for an entire redevelopment block if any portion of that block is affected by the potential lateral extent of vapor intrusion. Figure A-8 presents the potential lateral extent of vapor intrusion and shows that all redevelopment blocks, except blocks 1, 2, 4, and BOS-3, would require institutional controls for vapor intrusion. The Navy proposes to implement institutional controls for vapor intrusion across all of Parcel B based on ease and efficiency of implementation, consistency in long-term enforcement, and effectiveness of long-term maintenance. Institutional controls for vapor intrusion will remain in place as long as the underlying groundwater exceeds remediation goals.*" |
| 5. | | Threats to Groundwater from Contamination Left in Place. There are several instances where contamination is not considered in the risk assessment because the contamination is below the cut off depth for inclusion into the risk assessment (three feet for open space; 10 feet for industrial or residential). This contamination may still pose a threat to groundwater and surface water. Mercury | • Mercury source removal will be added to Alternatives S-3, S-4, and S-5. Please refer to the response to EPA specific comment 59.<br><br>• Quarterly groundwater monitoring at Parcel B since 1999 has not indicated that new, previously undiscovered sources of groundwater contamination exist at Parcel B. Contaminants that may remain in place have not affected groundwater to date and are not expected to affect groundwater in the future. |

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| | | at IR-26 is one example of contamination left in place that is not addressed in the risk assessment and continues to pose a risk to surface and groundwater. The issue of mercury at IR-26 was included in DTSC's original comments on the draft TMSRA. However, other contaminants left in place have not been discussed in the TMSRA. Contamination left in place is important when considering changes to the groundwater monitoring program. Please discuss contamination left in place and its potential affect on groundwater and surface water. Please address contamination left in when supporting changes to the groundwater monitoring program for Parcel B and evaluate the need for additional excavations to remove this contamination. Below are some examples of contamination in soil left in place.<br><br>Aroclor -1260: 50 mg/kg (0705N2G at 4 fbgs, in BOS-1), 14 mg/kg (0704P41 at 3 fbgs, in Block 3).<br><br>Arsenic: 929 mg/kg (IR07B017 at 31 fbgs, in BOS-2), 240 mg/kg (0704BC93 at 3 fbgs, in Block 3).<br><br>Asbestos: Chrysotile asbestos up to 5% at IR24. Up to 15% in earlier reports at BB2-7 and BB2-10.<br><br>Copper (Cu): 5,400 mg/kg (IR071T020 at 3.5 fbgs, BOS-1).<br><br>Lead (Pb): 17 locations at 1,000 mg/kg or greater, including 44,200 mg/kg (0704S1E at 8.5 fbgs, in BOS-1) and 8,540 and 8,380 mg/kg (0704BC1 and 0071B12 at 10 and 7 fbgs, in BOS-1), 5,120 and 4,540 mg/kg (IR07B050 and IR07016 at 10 and 16 fbgs, in "OTHER" about 20 feet from residential Block 6).<br><br>Mercury (Hg): 90.1, 80.6, and 38.6 mg/kg (EE05BC11, | • Aroclor-1260 is only slightly soluble in water and is not expected to create a groundwater problem.<br><br>• Groundwater samples from RAMP well IR07MW20A1 downgradient from sample IR07B017 and wells IR07MW26A, IR07MWS-2, and IR07MW20A1 downgradient from sample 0704BC93 have not exceeded the RAMP trigger level for arsenic.<br><br>• Asbestos is a concern as an airborne contaminant and is not expected to create a groundwater problem.<br><br>• Groundwater samples from RAMP well IR07MW20A1 downgradient from sample IR07IT020 have not exceeded the RAMP trigger level for copper.<br><br>• Groundwater samples from RAMP wells at IR-07 have not indicated a plume of dissolved lead exists at this area. Isolated samples (nearly all collected during a single event in September 2004) have exceeded the lead trigger level, but do not indicate a consistent pattern of elevated detections that would identify a plume.<br><br>• Mercury concentrations in bottom composite samples at Excavation EE-05 are proposed to be removed by the mercury source area excavation to mitigate their potential affect on groundwater. Groundwater samples from RAMP well IR07MW26A downgradient from sample IR07B036 have not exceeded the RAMP trigger level for mercury.<br><br>• Groundwater samples from RAMP wells IR07MW19A, IR07MWS-2, and IR07MW20A1 downgradient from sample IR23B013 have not indicated detections of tetrachloroethene.<br><br>• The TMSRA proposes remediation alternatives to address TCE in soil and groundwater in the area of Redevelopment Block 8 (IR-10). |

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| | | EE05BC05, and EE05BC08 all at 10 fbgs, in Block 16) and 20.1 mg/kg (IR07B036 at 31 fbgs, in BOS-1). Six other locations in EE05 area had Hg greater than 10 mg/kg.<br><br>Tetrachloroethene (PCE): 2.8 mg/kg (IR23B013 at 1.8 mg/kg, in Block 6).<br><br>Trichloroethene (TCE): Block 8 has 11 locations with TCE in soil at 100 mg/kg or greater, including 980 mg/kg (IR10B036 at 11 fbgs). There are 70 locations on Block 8 with TCE greater than 10 mg/kg. | |
| 6. | | Northwestern Boundary with Private Property. The data indicate that Parcel B contamination (e.g., IR18 and IR07 area) extends beyond the adjacent boundary into occupied private property on the northeast. The extent of contamination on adjacent private property has not been determined. This is especially a concern with respect to mobile contaminants, like total petroleum hydrocarbons (TPH), which may also entrain other contaminants. For example, TPH contaminated soil at the property boundary was excavated and backfilled: excavations did not extend beyond the property boundary. However, if TPH remains under adjacent property, contaminants may migrate into the backfill, re-contaminating Parcel B. Please discuss in the TMSRA how the Navy intends to address this contamination. | • Remediation alternatives in the TMSRA address contaminants at HPS. For example, Alternatives S-4 and S-5 will provide a cover over all of the areas of IR-07 and IR-18 along the northwestern property boundary. Although contaminant transport through soil would be expected to be minimal, any soil migrating onto Parcel B would be addressed by the cover and the on-going institutional controls that will require maintenance of the cover. Free-phase liquids, including hydrocarbons, were not observed in excavations along the northwestern property boundary (Tetra Tech 2002a, SulTech 2004). TPH that is not commingled with CERCLA-regulated substances is not addressed in the TMSRA, but is, instead, addressed by the Navy's corrective action program for TPH. A revised corrective action plan for TPH at Parcel B is currently being prepared.<br><br>• The Navy does not intend to extend remedial action onto the adjacent private property. No change to the report is proposed from this comment. |
| 7. | | Asbestos Regulations. Asbestos airborne toxic control measures for construction, grading, quarrying, and surface mining operations (California Code of Regulations, Title 17, Section 93105) are identified as an ARAR for constructing the Shoreline Revetment and Covers for the Soil alternative. Please include this ARAR for the excavation and off-site disposal alternative. | • The following bullet will be added to the list of bullets for the excavation and off-site disposal alternative on page 4-10.<br><br>• *"Asbestos airborne toxic control measure for construction, grading, quarrying, and surface mining operations at Cal. Code Regs. tit. 17, § 93105"* |

**TABLE 3: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, HUMAN AND ECOLOGICAL RISK DIVISION, ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

The table below contains the responses to comments received from the Department of Toxic Substances Control (DTSC), Human and Ecological Risk Division (HERD) on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by James Polisini (HERD) on June 19, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| **General Comments** | | | |
| 1. | --- | The version of the document furnished for review in Adobe PDF format on CD-ROM is locked to prevent copying. This prevents transfer of portions of the document text into the HERD comment memorandum without re-typing the entire portion of the text commented upon. Please furnish an unlocked version, or supply the encryption password, of future documents submitted for HERD review.<br><br>The HHRA evaluates the Exposure Point Concentration (EPC) based on Redevelopment Blocks. These Redevelopment Blocks are based on potential future use as "reasonably anticipated". Grids within each Redevelopment Block are evaluated for residential, industrial and recreational exposures regardless of the currently-planned future use. HERD recommends a deed restriction, or some mechanism of equivalent standing, be implemented to prohibit future residential or mixed land use for Redevelopment Blocks evaluated as industrial exposure.<br><br>The HHRA is generally well prepared and presented. However, HERD recommends several different exposure parameters and modeling parameters be used to recalculate exposure via several exposure pathways.<br><br>The ERA is generally well prepared and presented. However, HERD recommends presentation of several additional lines of evidence, such as inclusion of field collected tissues. | • Documents are distributed to the public (for example, the restoration advisory board) concurrently with the regulatory agencies and all receive the same files. Electronic versions are locked to prevent unauthorized changes to the reports. Recent upgrades to Adobe Acrobat 6 now allow for file creation that allows copying; future documents will be submitted to DTSC with the capability to copy text and figures.<br><br>• Institutional controls are included as part of all remediation alternatives. Section 4.3.2.1 will be revised as discussed in the response to DTSC (Lanphar) specific comment 54 to describe the risk management plan (RMP) that will be part of the institutional controls. The RMP will contain provisions for site-specific use requirements that can be structured to require only industrial use in areas that were evaluated for industrial exposure by the TMSRA HHRA. Mechanisms for implementing future institutional controls are being prepared collaboratively among the Navy, the City of San Francisco, and the regulatory agencies.<br><br>• Responses to questions concerning exposure parameters used in the HHRA and SLERA are included in responses to specific comments later in this document. |

**TABLE 3: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, HUMAN AND ECOLOGICAL RISK DIVISION, ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| **Specific Comments for the Human Health Risk Assessment** | | | |
| 1. | 1-2 & 2-12 | U.S. EPA guidance for calculating human health risk for sites with both chemical and radiological contamination requires risk from chemical contaminants to be summed with risk from radiological contaminants when evaluating remedial alternatives (OSWER, 1997). Radiological issues are scheduled to be addressed in "a future radiological addendum to the TMSRA (Section 1.1, page 1-2; Section 2.1.5.4, page 2-12). Total Parcel B human health risk from chemical contaminants and radiological contaminants cannot be determined at this time. HERD recommends amendment to the Parcel B Record of Decision (ROD) be delayed until the radiological issues are addressed. | • Comment acknowledged. The Navy agrees that the ROD amendment for Parcel B cannot be completed without an evaluation of human health risk based on potential exposure to radiological contaminants. These evaluations are on-going and will be included in the radiological addendum to the TMSRA. |
| 2. | A-8 | Only data qualified as rejected (R) are noted as not included in the Parcel B HHRA (Section A4.1, page A-8). Please clarify how data qualified as non-detect (U) or estimated below Laboratory Reporting Limit (UJ) was used in the HHRA. | • The second paragraph of Section A4.1 on page A-8 will be revised as follows. "Consistent with EPA guidance, only data qualified as rejected (R) were considered unusable for the risk assessment (EPA 1989). *For soil, U- and UJ-qualified data were incorporated into the HHRA by using a proxy concentration of one-half of the sample quantitation limit for each exposure area evaluated, provided the chemical was detected at least once. If the chemical was not detected in any samples for the exposure area, then the chemical was excluded from further evaluation from that exposure area. For groundwater, U- and UJ-qualified data were excluded from the HHRA. Estimated (J-qualified) concentrations were included in the HHRA groundwater data set.* Data quality issues..."<br>• Please also refer to the response to EPA general comment 2 on Appendix A. |
| 3. | --- | Many COPCs in residential grid units are represented by 1, 2 or 3 samples (Table A1-1 through A1-2). Risk and/or hazard evaluation criteria must be protective with this low level of characterization. The level of characterization in grid units immediately adjacent to any grid units with elevated risk and/or hazard values should be carefully evaluated before setting the boundary of any "hot spot". | • The HHRA contains no discussion of hot spots and does not use the concept of hot spots in evaluating risk. The grid is the basic unit of characterization for the HHRA; data are not shared between soil grids. Remediation alternatives are developed and evaluated in the TMSRA to address the fact that some grids are characterized by only a few samples and that some grids contain no samples. |

**TABLE 3: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, HUMAN AND ECOLOGICAL RISK DIVISION, ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 4. | --- | Upon visual inspection, a significant proportion of the reported results for analytical data for soil (Attachment A8), particularly for organic compounds, are qualified as non-detect (U), or estimated below Reporting Limits (UJ). Please explain how these data were used in the HHRA in selection of COPCs, specifically whether "all chemicals detected" (Section A4.4, page A-14) refers only to detected COPCs or detected and estimated (i.e., qualified J). | • Please refer to the response to DTSC (Polisini) specific comment 2. Estimated (J-qualified) concentrations were included in the data set. |
| 5. | A-12 | HERD defers to the DTSC Geological Services Unit (GSU) regarding hydrogeological consequences of the extrapolation of A-aquifer plume boundaries to the B-aquifer "Although contaminant plumes have not been identified in the B-aquifer at Parcel B" (Section 4.3.2, page A-12; and Attachment A4). For the HHRA and ERA, please demonstrate that the highest detected B-aquifer groundwater concentrations are contained within these hypothetical groundwater plumes. | • Please see the discussion provided in Section A4.3.2. All chemicals detected in the B-aquifer were evaluated in the HHRA, even if the highest measured concentrations were not associated with sample locations contained within the extrapolated groundwater plume boundaries. Chemicals associated with samples located outside of the extrapolated plume boundaries were evaluated in the risk assessment for non-plume exposure areas. |
| 6. | A-18 | Only "detected concentrations" were used to develop the groundwater Exposure Point Concentration (EPC) (Section 5.1.2, page A-18) and samples reported as non-detect (i.e., U-qualified) were not used. The text description of samples used for the groundwater EPC does not make clear whether samples reported as estimated (i.e., J-qualified) or estimated below Reporting Limit (i.e., UJ-qualified) were used in the calculation. Please state more explicitly the values used to calculate the 95UCL for groundwater. | • Please refer to the response to DTSC (Polisini) specific comment 2. |
| 7. | A-21 | The exposure model (VDEQ, 2005) used for the construction worker in a trench scenario (Section A5.1.3.5, page A-21; Attachment A5) was checked against the cited reference (http://www.deq.state.va.us/vrprisk/raguide.html). Formulae presented (Attachment 5) are those in the cited reference and the description as a box model with dispersion into the above-trench air is accurate. However, as noted (Attachment A) the ratio of the trench width (8 feet; Attachment A5, page A5-2) to the trench depth (9.76 feet; Attachment A5, page A5-2) is less than 1. The Virginia guidance recommends an Air Change per Hour (ACH) rate of 2 | • Attachment A5 of the HHRA (Groundwater-to-Outdoor Air Model for Construction Worker Trench Exposure) will be revised to clarify that the aspect ratio (that is, the ratio of trench width to depth) for construction trenches at Parcel B is expected to be at least 1 or greater than 1. Specific information from 340 excavations (more than 40,000 linear feet) conducted at Parcels B and D support this observation. Data from these excavations indicate that, for trenches less than 4 feet deep, the aspect ratio was approximately 1. For trenches between 4 and 6 feet deep, the aspect ratio was approximately 1.3. For trenches greater than 6 feet deep, the aspect ratio was approximately 1.5. These data show that the assumption of 100 for the trench ACH is appropriate and conservative, as this |

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| | | when this ratio is less than or equal to 1 (VDEQ, Section 3.2.2.1) and greater ACH based on the ratio of trench depth to average wind speed if the ratio of the trench width to the trench depth is greater than 1. The Parcel B calculations use the latter ACH method even though the width to depth is less than one (Attachment A5, page A5-2). Based on the average San Francisco wind velocity the ACH for Parcel B of 100 is used for the construction trench worker inhalation exposure calculations. Use of the ACH rate of 2, per the VDEQ guidance document, would raise the construction worker in trench exposure by a factor of 50. Incremental cancer risk and/or hazard via the inhalation pathway for this scenario would be elevated by the same factor of 50. The inhalation exposure for the construction worker in a trench scenario should be recalculated using the ACH of 2. | ACH is less than the VDEQ-recommended ACH of 360 for trenches with an aspect ratio greater than 1. |
| 8. | A-22 & A-23 | Exposure parameters (Section A5.2, pages A-22 and A-23;Tables A-4 through A-9) were checked and are the parameters required by Federal or California guidance documents or are reasonable values which appear to be health protective with the following two exceptions:<br>a. The Recreational Use inhalation rate of 0.83 $m^3$/hr, based on residential rate (Table A-6), is less than the probable inhalation rate for play or more strenuous activity. Even though the Recreational Use Exposure Time (ER) of 2.5 hours per day and the Exposure Frequency (EF) of 250 days/year most likely contribute to an upper bound estimate of inhalation exposure for the recreational user, an elevated recreational user inhalation rate on the order of 2.5 $m^3$/hr should be used. This recommendation is based on the construction worker elevated intake rate of 20 $m^3$/8 hour work period.<br>b. Skin Surface Area (SA) for the construction worker dermal contact with soil pathway is 5700 $cm^2$ (Table A-5) based on DTSC/HERD guidance. The SA for the construction worker dermal contact with groundwater should be the same value rather than the 2370 $cm^2$ proposed (Table A-8). | • An inhalation rate of 0.83 $m^3$/hr was used to evaluate inhalation exposures for adult recreational receptors in the HHRA. This inhalation rate was agreed during a meeting with the BCT in March 2004 as a conservative approach.<br>• The uncertainty analysis of the HHRA (Section A9.0) will be revised to include a discussion regarding the potential for underestimating construction worker risks and hazards associated with use of an exposed skin surface area for groundwater contact of 2,370 $cm^2$/day, compared with use of a skin surface area consistent with that used to evaluate soil exposures. Other assumptions used to evaluate risks and hazards for the groundwater dermal contact pathway for the construction worker will also be discussed. The assumptions for dermal contact with groundwater are conservative (8 hours per day, 250 days per year for 1 year), and when compounded in the calculation of risks/hazards, are unlikely to result in an underestimate of potential risks for this scenario. |

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| 9. | A-29 | Some of the U.S. EPA Region IX Tap Water Preliminary Remediation Goals (PRGs) and groundwater concentrations for the vapor intrusion pathway were recalculated to use the same toxicity values (CSFs and RfDs) used throughout the HHRA (Section A7.2, page A-29). Health-based calculation of media concentrations should not be referred to as U.S. EPA Region IX PRGs. Please indicate in the relevant table (Table A-13) those values which are health-based media concentrations rather than indicate that U.S. EPA Region IX PRGs and vapor intrusion groundwater concentrations were recalculated as a column heading. | • The nomenclature used in text and tables of the HHRA to refer to the recalculated EPA PRGs and vapor intrusion screening levels will be revised so that these concentrations are referred to as health-based media concentrations. Appropriate changes will be made in Appendix A. |
| 10. | A-30 | As noted in the text (Section A7.3, page A-30), DTSC considers an incremental cancer risk of $1x10^{-6}$ as the *de minimis* level above which risk management evaluation of remedial alternatives should be performed. Residential or industrial grid blocks which exceed this level must be identified in the figures and tables of the risk characterization portion of the HHRA (Section A8.0), rather than arbitrarily chose $1x10^{-5}$ as the carcinogenic threshold. In fact, Redevelopment Blocks which exceed the $1x10^{-6}$ cancer risk are already identified (Section A8.0, page A-31). | • The HHRA consistently discusses use of $10^{-6}$ as the cancer risk threshold. The HHRA does not contain discussion of use of $10^{-5}$ as an alternative risk threshold. No revisions to the report are proposed from this comment. |
| 11. | A-32 & A-37 | There appears to be no clear reference to any presentation of the risk and/or hazard from the summed exposure to contaminants in soil and groundwater. Attachment A-1 and A-2 present the risk and hazard from soil and Attachment A-3 presents the risk and hazard estimates for groundwater (Section A8.0, page A-32). The table headings and figure legends for in each of these sections refer either to soil alone or groundwater alone. The risk characterization summary for the residential use scenario (Section A8.2, page A-37) contains sections for (1) Soil – Total Risk (Section A8.2.1) from surface soil and subsurface soil; (2) Soil – Incremental Risk (Section A8.2.2) from surface soil and subsurface soil; and, (3) Groundwater (Section A8.2.3) from A-aquifer vapor intrusion and B-aquifer residential use. No presentation is made of the summed soil and groundwater risk and/or hazard. Please amend the text to clearly present the cancer risk and/or non-cancer hazard associated with the sum of soil and | • The methodology agreed to between the Navy and the BCT (October 2004) for the groundwater HHRA does not include presentation of cumulative risks for exposure to both soil and groundwater. Rather, as provided in Appendix A of the TMSRA, risks and segregated hazard indices are presented separately for each exposure medium. |

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| | | groundwater exposures and indicate the table, tables and figures which present the details of the exposure via all exposure pathways pertinent to each exposure scenario. | |
| 12. | 3-5 & 2-19 | Mercury is listed as a Contaminant of Concern (COC) in subsurface soils for the residential exposure scenario (Section 3.1.3, page 3-5). An EPA oral Reference Dose (RfD) is specified for mercury, while a CalEPA inhalation Reference Doses (RfD) is listed (Table A-12). The inhalation pathway is evaluated by modeling as no air samples were taken. A Volatilization Factors (VF) attributed to the U.S. EPA (EPA Region 9 PRG Tables) is used for 'volatile' COCs to estimate air concentrations. No VF is listed for mercury (Table A-2). Mercury in groundwater is listed as Non-Volatile (NV) (Table A-13). Inhalation hazard for mercury is listed as 0% where the other exposure pathways for mercury sum to 100% (Table 3-6 and Table A-18).<br><br>Mercury groundwater concentrations range up to 2.8 µg/L (Section 2.3.2, page 2-19). A simple Johnson and Ettinger screen of indoor air mercury concentrations using this mercury groundwater concentration at 3 meter depth and the sand soil type for overlying soil generates a Hazard Quotient (HQ) of 2.3E+00. Soil confirmation samples range from 0.2 mg/kg to 90 mg/kg (Section 2.3.2, page 2-19) at excavation EE-05. A soil mercury concentration of 40 mg/kg at 3 meter depth with no overlying groundwater and the sand soil type generates a similar HQ of 2.8E+00.<br><br>It appears that the inhalation pathway is not evaluated for mercury in Parcel B soil or groundwater. HERD recommends that the Navy supply an evaluation of the potential human health hazard for subsurface soil and/or groundwater mercury as part of the Technical Memorandum. | • Please refer to the response to EPA specific comment 21 regarding evaluation of vapor inhalation exposure to mercury in groundwater.<br><br>• Please refer to the response to DTSC (Lanphar) specific comment 26 regarding evaluation of ambient air and vapor inhalation exposure to mercury in soil. |

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| **Specific Comments for the Ecological Risk Assessment** | | | |
| 13. | B-5 | Direct exposure of secondary consumers to sediment-associated contaminants is not presented as a significant exposure pathway in the Conceptual Site Model (CSM) (Figure B-3). The figure should indicate this is a significant exposure pathway to account for the estimation of intake via incidental sediment ingestion (Section B2.1.3, page B-5; Table B-10 through B-14) for vertebrate receptors. | • Figure B-3 will be revised to indicate direct exposure to sediment-associated contaminants is a significant exposure pathway. On the figure, the pathway will be indicated as a solid line, rather than a dashed line. |
| 14. | B-10 | A range of adverse responses to sediment concentration occurs (Long, et al., 1998) between the National Oceanic and Atmospheric Administration (NOAA) Effects Range-Low (ER-L) and Effects Range-Media (ER-M). Parcel B intertidal sediment concentrations should be compared to both the ER-M and ER-L during the selection of Contaminants of Potential Ecological Concern (COPEC) (Section B2.3.1, page B-10; Table B-4). | • The screening level ecological risk assessment identified the primary risk drivers (chemicals that posed the greatest risk to ecological receptors) at the site using a comparison to ER-M values. Although concentrations between the ER-L and ER-M may occasionally result in adverse biological effects, concentrations above the ER-M offer a greater probability that adverse biological effects will occur (Long and others 1995). Nevertheless, the remediation alternative proposed for the shoreline (revetment) will be uniformly applied to the entire shoreline. Consequently, the remediation will still be protective of ecological receptors, even if comparison to ER-L values indicated one or more additional COPECs. No change to the report is proposed from this comment. |
| 15. | B-18 & B-19 | The text cites an earlier version of the method for calculating food intake rates (Nagy, et al., 1999) cited (Section B4.1.3, page B-18). The more recent method (Nagy, 2001) for estimating food intake rates for vertebrate receptors is used and presented in tables (e.g., Section B4.2.1, page B-19). Please correct the text citation. | • The citation will be revised as requested. |
| 16. | B-18 & B-51 | Bioaccumulation Factors (BAFs), from the *Macoma nasuta* laboratory sediment exposure testing previously performed for HPSY Parcel F, were used to estimate the shoreline prey item tissue concentrations for the Parcel B ERA (Section B4.1.4, page B-18). BAFs, which varied from the laboratory-derived BAFs, were also developed from field collected tissues in the Parcel F ERA (Section B5.2.4.1, page B-51). The most protective Parcel F BAF should be used to estimate shoreline tissue concentrations for the Parcel B ERA. | • The Parcel F validation study concluded that depurated *M. nasuta* from laboratory exposure testing was a reasonable surrogate for field-collected bivalves because there was a close correlation between tissue concentrations in laboratory test organisms and field-collected bivalves. The Parcel F validation study also concluded that, in South Basin sediments, depurated polychaete tissue reflected lower uptake on a normalized lipid basis than either amphipods or bivalves. The BAFs used in the assessment for Parcel B are protective. No change to the report is proposed from this comment. |

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| 17. | B-33 | Parcel B sediment concentrations exceed all the available San Francisco Bay ambient sediment concentrations (Section B5.1.1.2, page B-33) except for several individual Polycyclic Aromatic Hydrocarbon (PAHs) concentrations. But, Low molecular weight PAHs (LMWPAHs) and High molecular weight PAHs (HMWPAHs), as groups of PAHs, exceed the San Francisco Bay ambient sediment concentrations (SFRWQCB, 1998). This is to be expected in a comparison of central-bay sediment to near shore sediment, but should be considered during evaluation of any Parcel B sediment remedial alternatives. | • Comment acknowledged. Total high molecular weight polynuclear aromatic hydrocarbon (HMW PAH) and low molecular weight PAH (LMW PAH) concentrations exceeded the San Francisco Bay ambient concentrations; therefore, none of these chemicals were eliminated as COPECs based on the ambient screen (Section B5.1.1.2). No change to the report is proposed from this comment. |
| 18. | B-34 | Parcel B intertidal sediment concentrations should be compared to both the ER-L and ER-M during the refinement of COPECs (Section B5.1.2, page B-34; Table B-19) for benthic invertebrates. COPECs which are a significant fraction of the ER-M concentration should be carried forward with the refined COPECs. This comparison would result in only a few changes to the list of refined COPECs (e.g., zinc in surface sediments; $HQ_{ER\text{-}M}$=0.85 and Total HMW PAHs in subsurface sediments; $HQ_{ER\text{-}M}$=0.91). | • Please refer to the response to DTSC (Polisini) specific comment 14. |
| 19. | B-36 | The discussion of groundwater COPECs with HQ values in excess of 1 (Section B5.1.2.3, page B-36) discounts several COPECs because of low frequency of detection and the fact that the HQ for samples other than one or a few that exceed the groundwater screening value is less than 1. The HQ for the groundwater samples, other than those exceeding the screening value, must be supplied rather than stating that "...refined HQs were less than 1". | • Please refer to the response to DTSC (Lanphar) specific comment 40. |
| 20. | B-36 | Several of the groundwater samples which exceed the screening concentration were collected during the September 2004 sampling (Section B5.1.2.3, page B-36). Field collection notes should be reviewed to determine whether there is further information to add to the COPEC refinement process and possibly include these COPECs with the list of refined COPECs. | • The SLERA used validated data only. The validation process considers uncertainties in the data and applies appropriate qualifiers to the data. The uncertainty evaluation in Section B5.2 addresses these uncertainties. Field notes supplement the assessment but do not directly affect the process for selection of COPECs. Furthermore, the data set for groundwater includes the 12 most recent sampling events; consequently, data from samples collected during one event are not likely to have a great effect on the overall results. |

**TABLE 3: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, HUMAN AND ECOLOGICAL RISK DIVISION, ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 21. | B-36 | HERD considers the field collected tissue, while representing a single collection effort, a valid representation of the Subarea-wide polychaete tissue concentration and potential exposure concentration. Please summarize in this section of the Parcel B document the results of the preliminary study which indicate that field-collected samples may "overestimate concentrations in polychaete tissue" (Section B5.2.4.1, page B-36). | • The Parcel F validation study suggested that body burdens measured in the field-collected polychaetes were greater than body burdens measured in laboratory exposed *Macoma nasuta*. The validation study stated that field-collected bivalves were likely the result of COPECs sorbed to sediment in the guts and not a higher uptake rate into tissue. To support this hypothesis, the Parcel F validation study cited a study conducted in South Basin in 2001 and 2002 (USACE 2002). This study developed biota-sediment accumulation factors (BSAFs) for polychaetes and amphipods based on laboratory-controlled studies using South Basin sediments and depurated test organisms. BSAFs for PCBs based on depurated *Neanthes* ranged from 0.155 to 0.181, which were lower than BSAFs developed using *Leptocheirus* (an amphipod) (BSAFs ranging from 0.386 to 1.334). The BSAFs for *Neanthes* were also lower than BSAFs developed using the depurated *M. nasuta* data collected in South Basin for the validation study (0.418 for stations with sediment concentrations less than 2,000 parts per billion PCBs). Therefore, in South Basin sediments, depurated polychaete tissue reflected lower uptake on a normalized lipid basis than either amphipods or bivalve. This information will be incorporated into the discussion in Section B5.2.4.1. |
| 22. | B-54 | HERD agrees with the conclusion that ecological hazard from several contaminants in Parcel B sediments and groundwater cannot be ruled out (Section B5.3, page B-54). | • Comment acknowledged; no response necessary. |
| **Conclusions** | | | |
| 1. | --- | Several HHRA methodological issues require resolution:<br>a. Parcel B risk estimates should include risk from both chemical exposure and exposure to radioisotopes as the basis for risk management decisions;<br>b. U.S. EPA ProUCL or some statistical methodologies associated with ProUCL should be considered for developing the Exposure Point Concentration;<br>c. Use of the Virginia Department of Environmental Quality (VDEQ) trench inhalation model should follow VDEQ guidance | • (a) Please refer to the response to DTSC (Polisini) specific comment 1.<br>• (b) Because of the large number of exposure areas (grids) and scenarios evaluated in the HHRA for soil, use of EPA's ProUCL software for developing EPCs is impractical for the evaluation of soil risks. The methodology used in the HHRA to calculate EPCs for soil is consistent with the methods provided in the previous HHRA for Parcel B (*Parcel B Human Health Risk Assessment Methodology Technical Memorandum,* Tetra Tech 2003a). ProUCL was used to calculate EPCs in the HHRA for groundwater (see Section A5.1.2 of Appendix A of the TMSRA); also, please refer to the response to EPA specific comment 2 on Appendix A. |

**TABLE 3: DRAFT RESPONSES TO COMMENTS FROM THE DEPARTMENT OF TOXIC SUBSTANCES CONTROL, HUMAN AND ECOLOGICAL RISK DIVISION, ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | on the Air Change per Hour (ACH) rate;<br><br>d. Recreational user inhalation rates should be adjusted to a higher value and the construction worker skin Surface Area (SA) should be consistent for soil exposure and groundwater exposure; and,<br><br>e. A summed risk and/or hazard estimate must be presented for exposure to both soil and water.<br><br>HERD recommends some mechanism be put in place, for Parcel B Redevelopment Blocks determined to be suitable only for commercial/industrial uses, to limit future use to commercial/industrial use. Some type of buffer zone (i.e., offset) might be necessary between commercial/industrial use Redevelopment Blocks and mixed use Redevelopment Blocks.<br><br>Evaluation of sediment Contaminants of Potential Ecological Concern (COPECs) for benthic invertebrate should not be based solely on the Effects Range-Median (ER-M), but should also consider the Effects Range-Low (ER-L) when refining the list of ecological risk drivers.<br><br>HERD considers the field collected invertebrate tissue previously collected at Hunters Point Shipyard a valid single-sampling event determination of the Parcel F Subarea-wide invertebrate tissue concentrations. The potential ecological hazard associated with these field-collected tissue concentrations should be presented in addition to those developed from the laboratory-exposed Macoma nasuta tissues.<br><br>Once these Specific Comments are addressed this Technical Memorandum will furnish appropriate revisions of the HHRA and a shoreline ERA sufficient to allow evaluation of a revision to the Remedial Action Plan/Record of Decision (RAP/ROD). | • (c) Please refer to the response to DTSC (Polisini) specific comment 7.<br><br>• (d) Please refer to the response to DTSC (Polisini) specific comment 8.<br><br>• (e) Please refer to the response to DTSC (Polisini) specific comment 11.<br><br>• Mechanisms for future institutional controls are being prepared collaboratively among the Navy and the regulatory agencies.<br><br>• Please refer to the response to DTSC (Polisini) specific comment 14 concerning ER-M and ER-L values.<br><br>• Please refer to the response to DTSC (Polisini) specific comment 21 on field-collected invertebrate tissue. |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

The table below contains the responses to comments received from the San Francisco Bay Regional Water Quality Control Board (Water Board) on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by James Ponton (Water Board) on June 15, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| **General Comments** | | | |
| 1. | --- | No. 1, Installation Restoration (IR) Site 26: The continued monitoring of the IR-26 mercury plume, without source control/removal is unacceptable. Our reasons include:<br>(a) High levels of mercury in the San Francisco Bay (the Bay) are impairing its beneficial uses, which include sport fishing, wildlife habitat, and preservation of rare and endangered species;<br>(b) Groundwater data collected from well IR26MW47A demonstrates a consistent and ongoing source of mercury to groundwater from excavation area EE-05. Confirmation samples taken at EE-05 document that up to 90 milligrams per kilogram (mg/kg) mercury in soil remains. These high mercury soil concentrations have impacted groundwater;<br>(c) Well IR26MW47A which monitors the mercury plume sits within 50 feet of the shore, experiences tidal influence and is in communication with the Bay;<br>(d) The TMSRA concludes that mercury in groundwater poses an ongoing risk to ecological receptors;<br>(e) Continued monitoring does not satisfy the groundwater remediation goal presented in the TMSRA that includes "preventing and minimizing migration of contaminated A-aquifer groundwater above remediation goals to the surface water of San Francisco Bay;"<br>(f) Monitored natural recovery for an aquifer in light of an ongoing source area is not a reasonable nor acceptable remediation strategy for groundwater remediation; and,<br>(g) We are unaware of any natural processes that will convert mercury to a less | • (a) No response necessary.<br>• (b) Consistent detections of mercury have been observed in samples collected from well IR26MW47A. Bottom composite confirmation soil samples collected at Excavation EE-05 indicate concentrations as high as 90 mg/kg remain in place. The Navy agrees that remaining mercury in soil beneath Excavation EE-05 is a probable source of mercury in groundwater in this area.<br>• (c) The Navy agrees that it is likely that well IR26MW47A experiences tidal influence.<br>• (d) No response necessary.<br>• (e) The Navy agrees that monitoring alone does not satisfy the remediation goal for protection of the bay.<br>• (f) The Navy proposes to modify Alternatives S-3, S-4, and S-5 to include a component for the excavation and removal of additional soil beneath Excavation EE-05 to remove potentially remaining mercury source material. In addition, the Navy has installed two new groundwater monitoring wells in the vicinity of well IR26MW47A and will install a third well within the area of Excavation EE-05 after the final remedy has been selected and the mercury source removal completed.<br>• (g) Changes in pH and oxidation-reduction potential in natural waters can favor the precipitation of dissolved mercury; however, |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | toxic and less mobile form so as to prevent continued discharge/impact to the Bay and natural recovery of the A-zone aquifer. | such changes have not been observed in groundwater at well IR26MW47A. However, natural sorptive processes are effective in removing mercury from groundwater. Please also refer to the responses to EPA specific comment 61 and DTSC (Lanphar) specific comment 58. |
| 2. | --- | No. 2, Groundwater Evaluation Criteria: The TMSRA does not include a screening of near-shore groundwater data against applicable water quality criteria for human consumption of aquatic organisms, an approach that we have strongly advocated in past correspondence, meetings, etc.<br><br>Although we are pleased that Table B-5 (Appendix B, Groundwater Screening Criteria) includes Basin Plan, CTR and National Recommended Water Quality, and National Ambient Water Quality Criteria) includes an evaluation of surface water criteria, the TMSRA is silent with respect to the risks posed to humans who consume aquatic organisms that grow and may be harvested from the Parcel B inter-tidal area.<br><br>Over the past several years, we have requested that the Navy screen their tidally-influenced groundwater monitoring results against applicable aquatic toxicity criteria for the protection of (1) aquatic saltwater life, or (2) human receptors who consume fish and shellfish. Recommended toxicity criteria included the published regulatory standards, goals an guidance established by the Water Board in the "Water Quality Control Plan, San Francisco Bay Region (Water Board 2005), and a Compilation of Water Quality Goals" (Water Board 2000), the U.S. Environmental Protection Agency (EPA) California Toxics Rule (EPA 2000) and National Recommended Water Quality Criteria (EPA 2002). After the initial screen, we have advocated that any final assessment of remedial alternatives/activities would be evaluated using groundwater fate and transport factors.<br><br>Our recommended approach is consistent with the approach applied at Treasure Island Shipyard, San Francisco. We have had much discussion on this strategy and have summarized our discussions in a March 2006 letter written by the Water Board staff (i.e., Groundwater Evaluation Criteria, Points of Compliance, and Next Steps, Hunters Point Shipyard, San Francisco, dated March 16, 2006). For the record, a copy of our March 26 position letter (Attachment 1) is incorporated | • Potential human health risks from shellfish consumption were evaluated in the Parcel F validation study (Battelle and others 2005). For the purpose of the assessment, future residents were assumed to harvest and consume shellfish from the intertidal areas of HPS. The evaluation determined that cumulative health risks to future residents are consistent with or below reference levels at Area I (India Basin) and Area III (Pt. Avisadero).<br><br>• A discussion of trigger levels and comparison of groundwater to surface water quality criteria, similar to that prepared for the Parcel D FS, will be added as Appendix I to the TMSRA.<br><br>• Issues related to the response to the Water Board's letter of March 2006 have been discussed with the BCT (related to the trigger levels developed for the Parcel D FS) and will be addressed by the new Appendix I in the TMSRA. |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | into this comment letter.<br><br>Lastly, to date we have not received a formal Navy response to our March 2006 letter although the Navy has indicated that their response will be forthcoming (by June 2006 BCT meeting). | |
| 3. | --- | No.3, Surface Water and Parcel B Boundary: The TMSRA's statement that "there is no surface water on HPS Parcel B" seems contradicted by the scoping level ecological risk assessment (SLERA) provided as Appendix B. The SLERA's focus is on the inter-tidal zone of the Parcel B shoreline, benthic invertebrates that inhabit this range, and the adjacent offshore area associated with groundwater-surface water interaction. In addition, the claim that "groundwater may discharge to the bay, however any groundwater discharge occurs offsite" is unsupported by site specific data/facts.<br><br>We believe that near-shore groundwater, particularly in the areas of IR-07 and IR-26 (i.e., open shoreline areas that are not defined by engineered concrete sea walls) clearly communicates and exchanges with/into Parcel B sediments and adjacent surface water. | • The Navy continues to work with the regulatory agencies to define areas that are appropriately placed in onshore parcels (such as Parcel B) or in offshore Parcel F. The statement that "there is no surface water on HPS Parcel B" should be qualified to indicate there no surface water *in upland areas* at Parcel B or that surface water is a concern for Parcel B *only in the shoreline areas*. Text in the TMSRA will be modified accordingly. |
| 4. | --- | No. 4, Surface Water ARARs: As noted in Comment No. 3, above, surface water is not being evaluated as part of the TMSRA. Given that Parcel B is located along the edge of San Francisco Bay, we believe that the discharge of contaminants from the flow of groundwater (traveling directly to the Bay and/or through the existing or future storm drain/utility network) is a concern at Parcel B.<br><br>The Final Feasibility Study for IR Site 28, Todd Shipyards, Alameda, is located in a similar setting (i.e., adjacent to the Oakland inner harbor), includes/evaluates federal and state ARARs for surface water and proposes a remedial action objective for arsenic in groundwater on numerical water quality criteria promulgated in the California Toxics Rule (CTR).<br><br>Another example where the human consumption of organisms pathway was evaluated is found at Alameda Point, IR Site 1 (Draft Proposed Plan for IR Site 1 1943-1956 Disposal Area, Former NAS Alameda, dated May 16, 2006). The RAOs for groundwater proposed at Site 1 are based on human health criteria (for | • Requirements of the California Toxics Rule (CTR) will be identified as potential federal chemical-specific ARARs and Table 3-3 of the Basin Plan as potential state chemical-specific ARARs for the surface water beyond the interface of the A-aquifer groundwater and the bay. Appropriate changes will be made to Section 4.2 and Appendix C.<br><br>• The following text will be added as Section 4.2.1.3, titled "Surface Water." *"There is no surface water body on Parcel B. Groundwater at Parcel B has the potential to discharge to the bay. The Navy has identified the substantive provisions of the California Toxics Rule (CTR) as potential federal chemical-specific ARARs and Table 3-3 as potential state chemical-specific ARARs for surface water beyond the interface of the A-aquifer groundwater and the bay. In this TMSRA, the Navy is evaluating groundwater monitoring as a component of Alternatives GW-2, GW-3A, and GW-3B. This will allow the Navy to monitor any direct release of* |

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| | | consumption of organisms only) contained in the CTR. | *contamination to the bay.*" |
| 5. | --- | No. 5, Groundwater Chemicals of Potential Environmental Concern (COPECs): The TMSRA/SLERA does not provide sufficient supporting data to eliminate from further consideration the reported detections of copper, lead, mercury, selenium, zinc, alpha-chlordane, endrin aldehyde, gamma-chlordane, and heptachlor as COPECs for groundwater.<br><br>As compared to the Parcel B hexavalent chromium (chromium IV) study (documented in Appendix H of TMSRA) which was aimed at identifying the nature and extent of chromium IV in the vicinity of IR10MW12A, the COPEC discussion for groundwater falls short, providing no context (i.e., analytic data tables including applicable screening criteria, trend curves, well completion specifications, etc.) for not retaining all but one (mercury) COPEC.<br><br>Without a more rigorous evaluation and presentation of data, we do not support dismissing from further consideration the COPECs identified in the TMSRA/SLERA. | • Please refer to the response to DTSC (Lanphar) specific comment 40. |
| 6. | --- | No. 6, Remedial Alternatives evaluated for Groundwater: The Navy's strategy for groundwater remedial alternatives is to "eliminate complete exposure pathways to the potential receptors and to monitor the known affected areas while the aquifer recovers" does very little to control non-VOC source areas and minimize chemical (i.e., arsenic, copper, lead, mercury, selenium, zinc, alpha-chlordane, endrin aldehyde, gamma-chlordane and heptachlor) loading to the Bay.<br><br>While eliminating/minimizing human exposure to groundwater on the landward portion of Parcel B can be achieved through adopting, implementing and enforcing institutional controls preventing groundwater use and exposure, we believe that the retained remedial alternative(s) for groundwater (i.e., in-situ treatment, coupled with reduced groundwater monitoring and institutional controls) do little to remediate and control, for example, the mercury plume reported in IR-26. | • Please refer to the responses to Water Board general comments 1 and 5 and DTSC (Lanphar) specific comment 40. |
| **Specific Comments** | | | |
| 1. | --- | No. 1, Parcel B Boundary: Please provide a clear description of what portions of | • The SLERA is based on sediment samples collected from the |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | land and shoreline constitute Parcel B and that are included in the TMSRA. We note that the SLERA and its accompanying figures include the offshore portions of Parcel B/F in its ecological evaluation. | shoreline at Parcel B and does not consider any offshore areas in its evaluation. Please also refer to the response to Water Board general comment 3. |
| 2. | --- | No. 2, Appendix B (SLERA), TMSRA for Parcel B, Section B2.1.2: We do not agree with the statement that the ecological point of exposure for groundwater at Parcel B is the point where groundwater surfaces and mixes with surface water of the Bay. We believe that fate and transport processes of contaminated groundwater at the Parcel B shoreline include the migration and discharge of contaminated groundwater through sediment resulting in potential exposure to benthic invertebrates to contaminated groundwater and sediment. | • Mixing of groundwater and surface water is a complex topic that is subject to many variables. However, the SLERA focuses on the shoreline receptors, and therefore, is concerned only with the areas that receptors inhabit where groundwater can directly interact with surface water. This area would include the pore space within the shoreline sediment (habitat of the benthic invertebrate receptors) and the area above the sediment where groundwater mixes with the surface water of the bay (where diving birds, for example, could be exposed).<br>• The text of Section B2.1.2 will be revised as follows. "The ecological point of exposure for groundwater at Parcel B ~~is the point~~ *includes the areas within the shoreline sediment pore space and the areas* where groundwater surfaces and mixes with surface water of the bay." |
| 3. | --- | No. 3, Appendix B (SLERA), TMSRA for Parcel B, Section B5.1.2.3: The SLERA calculated hazard quotients (HQs) of greater than 1.0 for chemicals in groundwater that included arsenic, copper, lead, mercury, selenium , zinc, alpha-chlordane, endrin aldehyde, gamma-chlordane, and heptachlor. With the exception of mercury, none of these chemicals/metals were retained as COPECs for the protection of aquatic life. The reason for dropping these COPECs is rooted, in many instances, in "low or sporadic frequency of detection". As noted in General Comment Nos. 2 and 5, Section B5.1.2.3 is not sufficiently detailed to dismiss from further consideration the COPECs with HQs >1.0 nor has the Water Board and Navy reached consensus on what constitutes applicable screening limits/concentrations for groundwater that communicates with the Bay.<br>Revise the TMSRA to include sufficient detail (i.e., trend curves, analytic tables, screening levels, detection limits as compared to screening levels, etc.) to better justify the list of COPECs that will be carried forward. | • Please refer to the response to DTSC (Lanphar) specific comment 40. |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 4. | ES-7 | No. 4, Remedial Action Objectives (RAOs) for Contaminated Groundwater, ES-7 and Section 4.1.2: The RAOs for contaminated groundwater in part include preventing and minimizing migration of contaminated A-aquifer groundwater above remediation goals to the surface water of San Francisco Bay.<br><br>Expand the RAOs to include the protection of existing beneficial uses of surface water adjacent to Parcel B, including the protection of ecological receptors. | • This bullet will be revised as follows. "Prevent or minimize migration of contaminated A-aquifer groundwater above remediation goals to the surface water of San Francisco Bay. *This RAO is intended to provide protection of the beneficial uses of the bay, including protection of ecological receptors.*" |
| 5. | --- | No.5, Institutional Controls: Several of the soil, sediment, and groundwater remedial alternatives described in the TMSRA rely in part, on institutional controls to eliminate human exposure to contaminated soil, shoreline sediment, and groundwater. We believe that institutional controls are effective in minimizing exposure only if the controls are implemented, maintained, routinely evaluated and corrected/enforced upon in the event they are breached.<br><br>Elaborate and specify on who will maintain, evaluate, inspect and correct any identified deficiencies in any ICs adopted for Parcel B once the property is transferred from the Navy to the San Francisco Redevelopment Agency, etc. Further expand on what restrictions will be placed on site dewatering, utility (i.e., storm/sanitary lines, electric, etc.) corridors, structural pilings, etc. that may potentially transverse groundwater plumes, short-circuit the connection of those portions of the contaminated A-zone aquifer with the Bay, cross connect the A-zone with deeper drinking water aquifers bearing zones (B-aquifer and bedrock aquifers), and/or draw contaminated groundwater across the site and onto more relatively clean parcels. | • The Navy has addressed this concern by adding additional language to the draft TMSRA institutional control process option provisions in Section 4.3.2.1 of the TMSRA to address the Water Board's preferential pathway concerns. That language has been shared with the Water Board for further refinement, review, and comment. Specific details regarding roles and responsibilities for monitoring, inspection, and enforcement of institutional controls will be established in the land use control (LUC) remedial design/remedial action report as specified in the TMSRA. Please refer to Attachment 2 for more revisions to Section 4.3.2.1. |
| 6. | --- | No. 6, Building 142: Building 142 appears on Figure 2-1 but appears to be missing from subsequent figures. Correct the TMSRA figures as appropriate. | • Building 142 was demolished; demolished buildings are not shown on other figures in the TMSRA. No other corrections to figures are necessary. |
| 7. | --- | No.7, Figure 2-4, Site Conceptual Model: Amend Figure 2-4 to:<br><br>• Show (slightly project as needed) monitoring wells IR26MW48 A and – 47A onto Figure 2-4 (Hydro-geological conceptual model);<br><br>• Depict the tidally influenced zone shown on Figure 2-3 onto the cross | • Cross section C-C' will be modified to include well IR26MW48A. Well IR26MW47A will not be added to the cross section because very little material was recovered from the boring during well installation and the interpretation of the subsurface units is uncertain. |

**TABLE 4: DRAFT RESPONSES TO COMMENTS FROM THE SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | sections; and,<br>• Show the A/B aquifers to lend support of the distribution of Bay Mud aquitard and B-aquifer characterization write-up presented on page 2-2. | • The tidally influenced zone shown on Figure 2-3 will be projected onto the cross sections of Figure 2-4.<br>• The units corresponding to the A- and B-aquifers will be identified in the legend of Figure 2-4. |
| 8. | --- | No. 8, Section 2.2.4.3, Beneficial Use of Groundwater: Please correct Section 2.2.4.3 to:<br>• Reference the most current Region 2 Water Board Basin Plan; and,<br>• Include a description of all existing and potential beneficial uses for groundwater (i.e., surface water replenishment, etc). | • The text of Section 2.2.4.3 will be modified as follows. "Appendix E contains the complete beneficial use evaluation. *The evaluation considers the current Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin (Water Board 2004) which identifies the following existing and potential beneficial uses for groundwater: municipal and domestic water supply, industrial water supply, industrial process water supply, and agricultural water supply.*" |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA**

The table below contains the responses to comments received from the City and County of San Francisco (the City) on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by Amy Brownell (City) on June 20, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| 1. | --- | Section 1.2, Future Land Use. In describing land uses potentially associated with mixed-use and research and development areas on Parcel B, the draft TMSRA states that, among other things, such areas "could include upper-story housing . . .." Provided the soil cover is in place and intact, as described elsewhere in these comments, the property should be suitable for any uses that are not expressly prohibited, subject to certain restrictions. Among these allowable uses should be any residential use that does not undermine the integrity of the soil cover, which may include upper-story housing, but may also include residential dwellings at ground level. | • Based on discussions among legal staff from the Navy and the regulatory agencies, the description of future land use restrictions (described in Section 4.3.2.1) will continue to include language focused upon restricted uses subject to FFA Signatory review and approval, rather than allowable uses subject to FFA Signatory review and approval. Use of property for any form of residence for human habitation would require review and approval by the FFA Signatories in accordance with the "Covenant(s) to Restrict Use of Property", Quitclaim Deed(s), and the Parcel B RMP.<br>• Proposed revised text for Section 4.3.2.1 discussing institutional controls is included as Attachment 2 to these responses. |
| 2. | --- | Section 2.3.2 Overview of Groundwater. The IR-10B chromium VI plume is identified by detectable concentrations in one well only. Mercury is also detected in one well only (IR26MW47A), but this detection is not considered as a plume in the TMSRA, and is not included in the development of remedial alternatives. Even if "monitoring only" is selected as the remedial alternative for the mercury, it should be identified as a plume and addressed in Section 5.0: Development and Description of Remedial Alternatives. However, applying a monitoring only alternative to this non-naturally occurring plume may cause it to fail both the regulatory and community acceptance criteria. Consider performing some type of in-situ treatment or periodic removal to reduce the residual concentrations. The extent of impacts to groundwater is relatively limited; therefore only nominal effort and resources would be required for a remediation effort. | • Please refer to the response to EPA specific comment 13 concerning plume descriptions.<br>• Please refer to the response to Water Board general comment 1 about additional remedial alternatives for mercury at IR-26. |
| 3. | --- | General Comment on Section 3.0. This section describes many areas of Parcel B with excess cancer risk, noncancer hazards and contaminants above the remediation goals. In Section 5.0, only four areas of Parcel B are recommended for excavation due to exceedance of these criteria. Soil covers are proposed for mitigating exposure to metals in soil that exceed | • Please refer to the response to City comment 30 on Section 5.2.3 below. |

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| | | remediation goals, with the exception of lead at two locations. Only two locations with organics are proposed for excavation. See comment to Section 5.2.3 (below), which details the areas where organics and/or lead exceed remediation goals but are not proposed for excavation. | |
| 4. | --- | Section 3.1.1 – Exposure Scenarios and Pathways. The human health risk assessment for vapor intrusion from VOCs in groundwater is based on using a ratio of site concentrations to screening levels. The screening levels used were the U.S. EPA Vapor Intrusion Guidance (2002) groundwater screening values, which were apparently modified according to the California toxicity values used elsewhere in the Human Health Risk Assessment (HHRA). The use of screening values to estimate indoor air inhalation risks is an appropriate screening-level method to evaluate potential vapor intrusion, but the screening values used (Table A-13) are very conservative and appear to be about 2 orders of magnitude less than corresponding Environmental Screening Levels San Francisco Bay Regional Water Quality Control Board (SF-RWQCB ESLs) for protection of indoor air (SF-RWQCB, 2005 – Table E-1a). Therefore, groundwater vapor intrusion risks in the HHRA are more conservative than those that would be calculated using the ESLs, which is the most common approach, used in other screening-level risk evaluations in the San Francisco Bay Area. The risk evaluation includes the identification of remediation goals for volatile organic compounds (VOCs) (Table 3-18), which are based on a combination of risk-based concentrations (RBCs) and laboratory practical quantitation limits (PQLs). For VOCs, the groundwater risk-based concentrations developed for Parcel B were based on the conservative HHRA vapor intrusion calculations. In many cases, the RBC was lower than the PQL, which resulted in the remediation goal being set to the PQL. More site-specific RBCs or RBCs based on a site-specific attenuation of groundwater to indoor air concentrations would result in significantly different RBCs and remediation goals. | • The use of the EPA (2002) screening levels for vapor intrusion (modified for consistency with the toxicity criteria used elsewhere in the HHRA) to estimate risks from vapor intrusion of groundwater was based on the methodology agreed to between the Navy and BCT (October 2004) for the groundwater HHRA. Section A9.5 of the HHRA provides an evaluation of the differences associated with use of a generic, rather than site-specific, screening level to estimate risks from vapor intrusion. The evaluation showed that use of generic screening levels resulted in an overestimate of potential risks from vapor intrusion by no more than a factor of two, accounting for the site-specific conditions at HPS. Accordingly, the generic groundwater remediation goals developed for Parcel B to address the vapor intrusion pathway are not expected to be overly conservative by more than a factor of two. |
| 5. | --- | Section 3.1.3.1 Total Risk Evaluation. Tetrachloroethene and trichloroethene are included as chemicals of concern in soil based on inhalation of volatile organic compounds to outdoor air. Why wasn't risk from VOCs in soil to indoor air included in the risk estimates for the residential and industrial exposure scenarios? Appendix A, Section 5.1.3 does not include a discussion of this pathway. | • Please refer to the third bullet in the response to DTSC (Lanphar) specific comment 26 regarding evaluation of vapor intrusion for the unsaturated zone. |

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| 6. | --- | Section 3.0 Tables and Figures.<br>• Table 3-11, page 1 of 2 – There is an error in the percent contribution by exposure pathway that starts in the lines of Redevelopment Block 7 and continues for several lines. The percentages add up to more than 100% and that is not possible.<br>• Table 3-22, page 3 of 9, Redevelopment Block 3 – In grid number B1230, sample number 0704BC89, the concentration is listed as 174 mg/kg but in Appendix A the concentration is listed as 211 mg/kg. Please correct this discrepancy.<br>• Table 3-22 – Incremental Risk: Risk and Hazards Drivers by Planned Reuse and Associated Sampling Locations Exceeding Remediation Goals, Subsurface Soil (0 to 10 feet bgs) - The entry for B3426 (Block 8) is missing from the table. This is one of the areas proposed for excavation (Page 5-6).<br>• Figure 2-2: The Excavation Location Map (Figure 2-2) shows several excavation areas which appear to be shown as areas with no data (Figures 3-2 through 3-6) for purposes of HHRA calculations, although Appendix A states that data collected from post-excavation confirmation samples were used. Rather than showing backfilled areas as having no data, we suggest that data from backfill material as well as post-excavation confirmation samples be included in risk calculations to provide a more realistic risk.<br>• RME - Almost all of the Section 3.0 tables include a reference to the Reasonable Maximum Exposure (RME) for the calculation of intake and associated risks and hazards. Although RME is defined in Appendix A, a definition of RME should be inserted into Section 3.0 to explain the tables as well as on the tables themselves.<br>• Construction Worker Risks – The assumed exposure duration for the construction worker risk calculations is one year (Table A-4, A-5, A-6 and A-8), which we understand is based on DTSC guidance for | • Table 3-11 will be revised to correct the percent contribution errors.<br>• The discrepancy between the result shown for lead in grid B1230 Table 3-22 and the result shown in Attachment A8 resulted from the methodology used for duplicate samples in the HHRA. As discussed in Section A4.2.1 of the HHRA, duplicate samples are averaged in the HHRA for purposes of calculating exposure point concentrations (EPC). The concentration of 174 mg/kg shown in Table 3-22 is based on the average of the duplicate results for sample location 0704BC89: 211 mg/kg and 137 mg/kg. Attachment A8 provides both of these results.<br>• Tables 3-21 and 3-22 will be revised to list discrete sample results for samples with duplicates (that is, both the original result and the duplicate result will be presented). Footnotes will be added to these tables to identify the duplicate results.<br>• Table 3-22 will be revised to include the sample result for lead in grid B3426.<br>• Figure 2-2 will not be revised. Excavation backfill material is not considered in the HHRA.<br>• The text and tables in Section 3.0 will be revised to include an explanation of RME.<br>• According to City's transmittal letter for these comments, dated June 20, 2006, the City considers the assumptions used to evaluate potential risks to construction workers to be conservative, and that construction workers would not be at risk during normal construction activities. In discussions with the BCT concerning this issue, DTSC staff agreed to investigate the basis for the construction worker exposure parameters to ensure the parameters would be protective of the planned construction activities at Parcel B. Mr. Tom Lanphar, DTSC, consulted DTSC risk assessment staff and confirmed in a meeting with the Navy on July 12, 2006, that the construction worker exposure assumptions would be adequate to address the expected construction scenario at Parcel B. |

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| | | modeling construction worker risks. Does the one-year exposure duration and the Hunters Point site-specific 150 by 150 grid model result in a calculated risk that is adequately protective of construction workers for expected construction scenarios at Hunters Point Shipyard? Our understanding is that the build out of Parcel B may continue for 10 years, involving construction worker and soil movement throughout the site. | |
| 7. | 4-3 | Section 4.1.1.2, Page 4-3, Soil RAO for Inhalation of VOCs. With the exception of Alternative S-5, it is unclear how each of the alternatives presented in Section 5.0 address the inhalation of VOCs. | • Alternatives S-2, S-3, and S-4 address the potential risk from inhalation of VOCs through institutional controls for existing buildings and through engineering controls for future structures. Residential or industrial occupancy of existing buildings will be prohibited where the HHRA concludes there is a potential unacceptable risk. Vapor controls will be required as part of future structures built in all areas of Parcel B. Engineering controls could also be used to retrofit existing buildings so that residential or industrial occupancy would be acceptable. Additional discussion of institutional and engineering controls related to vapor intrusion will be included in Section 4.3. |
| 8. | 4-3 | Page 4-3 – Methane at Block 3. States "Prevent presence of methane in soil gas above... 5 percent (by volume in air)". Although the removal action appears warranted, actual identification of the source material in the field may not be achievable. Experience at Mission Bay (San Francisco) indicates that methane concentrations may be highly variable in a small area (e.g., single commercial building footprint) over time, i.e. it may not be there when the same location is re-sampled and/or it may recur later, if the true source material is not identified/identifiable and excavated. Therefore, it may be necessary to monitor several times post-remediation to verify that the source has in fact been removed. If methane recurs, additional excavation may be warranted or a vapor mitigation system (VMS) may be required for any new structure within 100 feet in accordance with current DTSC guidance. | • Please refer to the response to EPA specific comment 54. |

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| 9. | 4-4 | Section 4.1.2.1, Page 4-4, Groundwater Plumes and Chemicals of Concern. Since the HHRA did not find unacceptable risk associated with the IR-10B plume, it may not appear to be worth any effort to remediate this plume. However, remedial action may be necessary to gain regulatory and/or community acceptance. The chromium VI plume appears to be relatively confined; therefore, it may be amenable to limited, localized in-situ treatment with an agent that induces the chromium VI to convert to chromium III. | • Active remediation is not proposed for the IR-10B plume. No change to the table is proposed from this comment. |
| 10. | 4-14 | Page 4-14 – Treatment of Soil. Suggest rewording as follows: "Treatment – Includes in situ and ex situ treatment of soil to reduce the toxicity (via degradation) and/or volume (via destruction) of the contaminants." It should also be noted that the reduction of toxicity may be dependent upon driving the chemical reactions to completion, to avoid leaving more-toxic daughter products. | • The text of Section 4.3.1 will be revised as follows. "Treatment—includes…to reduce the toxicity *and volume* of the contaminants." |
| 11. | 4-14 | Section 4.3.1, Page 4-14, Development of General Response Actions. For both soil and groundwater, ICs including land use restrictions and access restrictions are listed as a General Response Action (GRA). However, none of the cost estimates presented in Appendix D include any funds for installation or maintenance of the access restrictions which would presumably include installation fencing at a minimum, possibly supplemented by additional security measures. Installation of signage and annual drive-by inspections are inadequate "access restrictions" for this site. | • The cost estimates for the alternatives assume that signs would be sufficient to restrict access. The cost estimates include a land use control remedial design. Appropriate institutional and engineering controls will be evaluated for these alternatives. |
| 12. | 4-14 | Section 4.3.1, Page 4-14, Development of General Response Actions – Groundwater. The last bullet item for groundwater states, "Containment – Includes installing a slurry wall to control groundwater flow and vapor barriers to prevent vapor intrusion." Although a slurry wall meets the definition of "containment", vapor barriers do not. It would be more accurate to instead classify vapor barriers as an "engineering control", since they do not contain the impacted medium, but rather block an exposure pathway. | • Vapor controls create a physical barrier to prevent the migration of contaminated vapors to indoor air. Vapor controls can include more than vapor barriers and are considered part of the containment general response action. The text will be revised as follows. "Containment – Includes installing a slurry wall to control groundwater flow and vapor controls ~~barriers~~ to prevent vapor intrusion." |

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| 13. | --- | Section 4.3.2.1, Evaluation of Applicable Soil Process Options and Section 4.3.2.2, Evaluation of Applicable Groundwater Process Options.<br><br>**1. Institutional Controls Generally**<br><br>We disagree with the statement in the draft TMSRA, as applied to Parcel B, that the purpose of institutional controls is to maintain the integrity of a remedial action until remediation is complete and remedial goals are achieved. (4-15 to 4-16).<br><br>It is our view that institutional controls are administrative and legal controls that are put in place as part of a remedy on a site after remediation is complete to limit the exposure of future users to contaminants where a site has not been cleaned to unrestricted use standards. On Parcel B, it is our understanding that the specific purpose of the institutional controls is to assure that the site may be reused in a manner that protects future users, as provided for in the City's 1997 Redevelopment Plan, from exposure to contaminants in excess of remediation goals for the site. Accordingly, the remedy, including the institutional controls, should be considered a permanent remedy; all references to future "cleanup" should be deleted from the TMSRA, and no future environmental characterization of the site should be contemplated.<br><br>**2. Soil Cover Generally**<br><br>The fundamental principle of the institutional control for the soil cover requirement must be that, provided the cover prohibiting soil exposure is properly constructed and intact, Parcel B will be suitable for the intended land uses. Instead, the institutional control in the draft TMSRA is designed to only allow for "restricted land uses" if Navy and DTSC approval is obtained prior to construction, and in accordance with a highly problematic process and set of criteria (page 4-17). This structure for the institutional control does not establish that Parcel B will be suitable for its intended reuse following transfer.<br><br>At the time of the transfer, the soil cover should be in place and the intended land uses should be allowable without any further approvals. At that time, the soil cover should meet all of the specification established for use of the | • The Navy is continuing to work actively with the BCT and the City to resolve issues related to the content, implementation, and enforcement of institutional controls.<br><br>• **City subsection 1**. Proposed revised text for Section 4.3.2.1 discussing institutional controls is included as Attachment 2 to these responses. This revised language addresses the City's concern about limiting exposure to hazardous substances remaining on the property and clarifies that ICs serve both the purpose of protecting the integrity of remedial action and preventing exposure to contaminants left in place.<br><br>• Institutional controls will also prevent exposure where waste has been left in place (for example, IR-07 and IR-18).<br><br>• Also refer to the response to DTSC (Lanphar) specific comment 53.<br><br>• **City subsection 2**. The proposed land use restrictions are consistent with and support the land uses set forth in the 1997 Redevelopment Plan. The intended land uses may proceed subject to restrictions approved in advance by the FFA Signatories. This will ensure that the intended land uses will be conducted in a manner that will protect human health and the environment.<br><br>• The Navy generally agrees with the statement that proper management of soil and groundwater and the repair or replacement of covers resulting from land-disturbing activities is important. Land-disturbing activities such as grading and trenching will require restrictions to assure proper management of soil and groundwater and replacement or repair of disturbed covers. Also refer to the response to DTSC (Lanphar) specific comment 57.<br><br>• **City subsection 3**. Institutional controls will apply to industrial and open space land uses, in addition to residential uses. Please refer to the revised discussion of institutional controls presented as Attachment 2.<br><br>• **City subsection 4.** Soil cover is proposed for open space areas at IR-07 |

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| | | site subject to certain "activity" restrictions, as further described below in these comments. Provided the soil cover is properly in place and intact, the institutional controls should not require the transferee to obtain additional approvals or take further actions to allow for any of the intended land uses. If redevelopment requires land-disturbing activities, these activities should be identified as subject to separate "activity" restrictions that assure proper management of soil and groundwater and the replacement of cover, pursuant to an approved Risk Management Plan, as further discussed in these comments.<br><br>3. Scope of Land Uses Subject to Soil Cover Requirement<br><br>The institutional control language in the draft TMSRA does not include commercial and industrial uses or open space uses among the land uses on Parcel B subject to the soil cover requirement. However, based on our understanding of the draft TMSRA and the accompanying human health risk assessment, commercial and industrial uses and open space uses are among those land uses that would pose an unacceptable risk to human health without soil cover to eliminate the soil exposure pathway. The draft TMSRA should be clear about what land uses are included among the land uses subject to the soil cover requirement on Parcel B and why. For the reasons described in this comment, we have included commercial and industrial and open space uses, as well as all other uses that aren't expressly prohibited, as uses subject to the cover requirement in the proposed approach to the institutional control set forth below in comment 5 of this section.<br><br>4. Areal Extent of Soil Cover Requirement<br><br>According to Table 5-1, Major Components of Soil Alternatives by Redevelopment Block, the draft TMSRA does not propose soil cover for portions of Parcel B. While the text does not discuss the rationale for only proposing soil cover in certain areas, it appears that soil cover is only being proposed as the remedy in areas where sufficient sampling was conducted to determine that soils pose an unacceptable risk to human health. Where no soil sampling was conducted or minimal soil sampling was conducted that did not identify human health risks, no risk is assumed and no soil cover is | and IR-18 (Redevelopment Block BOS-1). A figure will be added to the TMSRA to illustrate the proposed locations of various types of covers. Please also refer to the response to EPA specific comment 58.<br><br>• **City subsection 5**. Please refer to the response to subsection 1 above and Attachment 2 for discussion of restricted land uses.<br><br>• Any use of groundwater will be prohibited, just as it currently is in the existing ROD.<br><br>• Institutional controls will continue to describe restricted uses, not allowable uses.<br><br>• Please refer to Attachment 2.<br><br>• **City subsection 6**. Risk management plan provisions have been included in the revised language in Attachment 2. Please refer to Attachment 2 and to the response to DTSC (Lanphar) specific comment 54.<br><br>• **City subsection 7**. Please refer to Attachment 2.<br><br>• **City subsection 8.** Operation and maintenance requirements will be contained in the LUC RD. Activities conducted to address O&M requirements (for example, repairing damage from erosion) that are unrelated to institutional controls (such as, RCRA ARARs or engineering control requirements) will not be addressed in the LUC RD. The Navy considers O&M only of the original covers. Oversight of institutional controls to ensure covers are effective is a separate item. The costs of complying with institutional controls that are not directly related to the original covers would not be borne by the Navy. For example, the cost of a replacement cover to comply with institutional controls would be a local cost incurred, not a cost borne by the Navy. |

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| | | proposed. Instead, soil cover should be proposed for the entirety of Parcel B due to the anticipated risk associated with ambient metals and some organic contaminants in soil, based upon soil sampling that was conducted at the site. The text of the TMSRA should be clear about the areal extent of the soil cover requirement on Parcel B, rather than only having this information summarized in Table 5-1.<br><br>**5. Distinguishing Prohibited Land Uses From Land Uses and Activities Subject to Conditions**<br><br>The Institutional Controls section should more clearly identify the purpose of the institutional controls on Parcel B and why these particular controls are necessary (e.g., specify the risk and how it is addressed by the control). As we understand the situation on Parcel B, some uses will need to be prohibited, all uses not expressly prohibited will be allowed provided the soil cover is in place and intact, and some activities will be subject to certain site management requirements.<br><br>We propose the following general approach to the Parcel B institutional controls in lieu of the approach taken in the draft TMSRA.<br><br>Prohibited Uses<br><br>The following uses shall be prohibited at HPS Parcel B:<br><br>a. Growing of vegetables in native soils for human consumption.<br><br>b. Use of groundwater as a source of drinking water.<br><br>c. Indoor occupancy of structures in areas where groundwater contamination has been identified as posing a risk to human health due to volatilization of contaminants, unless the vapor pathway is reduced to an acceptable level through engineering controls or other design alternatives which meet the specifications preliminarily set out in the Containment section of the TMSRA, detailed in the Proposed Plan, ROD Amendment, and Land Use Covenant Remedial Design (LUC RD), as appropriate, and incorporated into the Risk Management Plan described in these comments. As discussed elsewhere in our Comments, it is our understanding that the areas subject to unacceptable | |

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| | | vapor risks from groundwater plumes will be adjusted as data demonstrates a change in the area of risk. The Risk Management Plan should reflect that the area subject to special controls as a result of vapor risks is expected to be adjusted over time and provide guidance on how to determine the applicable area subject to such controls at the time of any land disturbing activity.<br><br>Soil Cover Requirement<br><br>The following uses are allowed in all areas as long as the soil is covered to prevent soil exposure in accordance with soil cover specifications (these specifications should be preliminarily set out in the Containment section of the TMSRA, detailed in the Proposed Plan, ROD Amendment, and LUC RD, as appropriate, and incorporated into the Risk Management Plan described in these comments).<br><br>a. A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation,<br><br>b. A hospital for humans,<br><br>c. A school for persons under 21 years of age,<br><br>d. A day care facility for children,<br><br>e. Any permanently occupied human habitation including those used for commercial or industrial purposes,<br><br>f. Any other use not specifically prohibited, including but not limited to commercial, industrial, open space, civic and educational uses.<br><br>Activities Subject to Site Management Requirements<br><br>The following activities at HPS Parcel B are subject to the conditions set forth below:<br><br>a. Alteration, disturbance, or removal of any component of a response or cleanup action (including but not limited to pump-and-treat facilities, revetment walls and shoreline protection); groundwater extraction, injection, and monitoring wells and associated piping and equipment; or | |

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| | | associated utilities is prohibited without the prior review and written approval of the Navy and DTSC, except as provided below in Section (d).<br><br>b. *Land disturbing activities shall only be allowed when conducted* pursuant to an approved Risk Management Plan containing the necessary elements detailed in the Proposed Plan and required pursuant to the ROD Amendment and the LUC RD as further explained in these comments. Land disturbing activities include but are not limited to: (1) excavation of soil, (2) construction of roads, utilities, facilities, structures, and appurtenances of any kind, (3) demolition or removal of "hardscape" (for example, concrete roadways, parking lots, foundations, and sidewalks) existing at the time of the ROD Amendment issuance, and (4) any other activity that involves movement of soil to the surface from below the surface of the land or causes the preferential movement of known contaminated groundwater.<br><br>c. Extraction of groundwater and installation of new groundwater wells for the purpose of dewatering sites as required for redevelopment activities is allowed only when conducted in accordance with an approved Risk Management Plan. See Section (b) above regarding land disturbing activities.<br><br>d. Removal of or damage to security features (for example, locks on monitoring wells, survey monuments, fencing, signs, or monitoring equipment and associated pipelines and appurtenances) related to Navy activities is prohibited without prior written approval by the Navy.<br><br>**6. Risk Management Plan for Land Disturbing Activities**<br><br>We strongly disagree with the approach to a Soil Management Plan taken in the draft TMSRA, as further detailed in our comments below (pages 4-17 to 4-18). A more appropriate approach is to require the preparation of a Risk Management Plan as part of the remedy. We envision that the Risk Management Plan will set out a process for the proper handling and management of soil during land disturbing activities, groundwater dewatering, and for controls in areas with groundwater plumes where inhalation of VOCs may result in unacceptable exposure risks to | |

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| | | construction workers during land disturbing activities or preferential migration of contaminated groundwater may occur. It should establish performance standards and generally applicable specifications; notice requirements prior to conducting specified activities; the procedures and planning to follow during work; the requirements for assuring that soil cover is adequately reestablished; where necessary, vapor barriers are installed, prior to allowing uses subject to such a requirement; and notice requirements upon completion of work. The Risk Management Plan should be based on necessary elements detailed in the Proposed Plan and be required pursuant to the ROD amendment and LUC RD as part of the site remedy. We expect that it will be enforceable through the Navy/DTSC Covenant but we also expect that pursuant to the Navy/DTSC Covenant, a process will be established by which the site-by-site implementation of the Risk Management Plan may be approved and overseen by the City through its adoption of an ordinance.<br><br>As an additional and necessary layer for ensuring the proper maintenance of institutional controls, it is expected that the Navy/DTSC Covenant will provide for a process in which the City may approve and oversee compliance with a Risk Management Plan by adopting an ordinance that assures specified activities are carried out in accordance with the Risk Management Plan requirements. The City is in a unique position to perform this role because it has permit authority over land uses, infrastructure, building and occupancy, and expertise in implementing deed restrictions within the jurisdiction.<br><br>**7. Flaws with the Soil Management Plan as Proposed.**<br><br>As part of obtaining approval for restricted land uses, the draft TMSRA would require the transferee to prepare and submit a SMP providing for cleanup and/or construction to standards protective of human health and the environment for residential land use (page 4-17). The draft TMSRA further states that the SMP shall include any necessary construction plans and schedules, operation and maintenance (O&M) plan requirements, and any supplemental land use restrictions required to protect human health and the environment. The purpose of these requirements, the risks that may be driving them, and need for the inclusion of such requirements in a SMP are | |

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| | | unclear to us. We believe that the Risk Management Plan approach set forth in these comments can adequately address matters for which the draft TMSRA calls for a SMP and any reference to the SMP including construction documents, cleanup requirements, supplemental land use restrictions, or establishing O&M obligations should be eliminated.<br><br>**8. Operation and Maintenance of Institutional Controls**<br><br>The institutional control language in the draft TMSRA states that O&M requirements are to be addressed in the SMP (page 4-17). As indicated above in these comments, however, O&M requirements should be specified by the institutional controls and established in the TMSRA, Proposed Plan, ROD Amendment, and LUC RD, as appropriate. Discussion of institutional controls in the TMSRA should anticipate the need for the institutional controls to operate in conjunction with O&M planning requirements (e.g., for maintaining soil cover), as well as the need for a land use covenant enforcement and implementation plan under California law.<br><br>For example, the section related to soil cover correctly points out that covers will need to be maintained (page 4-20). However, the Institutional Controls section should go beyond merely noting this and identify the Institutional Control mechanism that will be put in place to assure the maintenance is carried out. As another example, the groundwater section does not clearly discuss the need for vapor barriers or the like or provide any information on the performance standards for maintaining the integrity of such barriers. (4-21 to 4-22). The TMSRA must address this issue. | |
| 14. | 4-17 | Additional Comments on Section 4.3.2.1, Page 4-17 – Analysis of General Response Actions. The TMSRA also includes as a restricted activity any activity that causes the preferential movement of known contaminated groundwater. In order to evaluate causation of preferential movement of contaminated groundwater, the transferee will require detailed and timely information concerning the extent of contaminated groundwater, existing flow paths and range of influence of injection/extraction wells.<br><br>The TMSRA states that metals at concentrations above remediation goals are spread throughout Parcel B, and site-wide excavation is not practicable | • At the time of transfer, all up to date information regarding the extent of groundwater contamination will be provided to the transferee. Groundwater flow directions are well characterized in Parcel B groundwater monitoring reports. Any new groundwater information obtained after transfer will also be provided to the transferee in a timely manner.<br><br>• The area of IR-07/18 has unique characteristics including the presence of debris fill and status as a radiologically impacted area. Excavation in the area of IR-07/18 was unsuccessful largely because of the content of the |

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| | | for metals other than lead. However, there are numerous areas where PAHs, pesticides and PCBs have been detected above remedial goals and should be excavated. If the Navy's previously stated goal of removing CERCLA contaminants from all of Parcel B has been replaced by use of a soil cover, this should be clearly stated. In addition, if the area of IR7/18 has unique characteristics that make the excavation of CERCLA contaminants infeasible then that area should be specifically identified as an area where contaminants at levels above the remediation goals can remain in place and the reasons for not requiring excavation should be clearly explained. | debris fill used to create this area. The location of the area within IR-07/18 that will be subject to additional institutional controls based on the debris fill and potential radiological contamination will be addressed in the radiological addendum to the TMSRA and identified in the LUC RD that will be part of the implementation of the institutional controls.<br>• Areas outside of IR-07/18 that contain concentrations of PAHs, pesticides, and PCBs above remediation goals are proposed to be excavated, except those areas where the concentrations exist at 10 feet bgs, are beneath a building footprint, or will be beneath the shoreline revetment. |
| 15. | 4-20 | Section 4.3.2.1, Page 4-20, Containment. Reference is made to using a cover(s) for containment, and potential for removal and replacement of the cover. As the property is redeveloped, the cover will be removed and replaced in different portions of Parcel B over time. The Navy's report states that covers need to be appropriately maintained or replaced, in conformance with the noted minimum cover requirements. There is no mention of additional sampling requirements related to replacement of covers. We would like to clarify that as long as (1) no obvious environmental conditions are encountered (visual or olfactory evidence of contamination) during redevelopment, (2) the Navy's minimum cover requirements are met, and (3) no soil leaves the site; then no additional sampling requirements will be imposed, as the proposed remedy would already have been deemed protective by the regulatory agencies that concurred with the Navy's remedy. | • The bullet list on page 4-20 under "Containment" will be expanded to include the following bullet.<br>• "*Sampling requirements associated with disturbance of covers will be in accordance with the RMP.*" |
| 16. | 4-19 | Page 4-19, Removal (first complete paragraph). States "Excavation is expected to be effective in remediating whatever materials are present in the subsurface at Redevelopment Block 3 that are the source of methane observed in soil gas samples." It is understood that the source of the methane has not yet been identified and is therefore open to speculation. Nevertheless, it would be beneficial for the purposes of remedial alternative evaluation for this document to state what may reasonably be anticipated to be found in terms of the source of methane. This would assist in the evaluation of this component of the proposed remedial action alternatives, | • The following text will be added to page 4-19: "Excavation is effective and implementable…Excavation is expected to be effective in removing whatever materials are present in the subsurface at Redevelopment Block 3 that are the source of the methane observed in soil gas samples. *The source of methane is believed to be from the disposal of construction debris, possibly wood that is in contact with groundwater.* Excavation depths…" |

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| | | as well as provide a basis for the portion of the cost estimates related to the methane source excavation presented in Appendix D. | |
| 17. | 4-19 | Page 4-19 – Excavation along shoreline (2nd Paragraph). States "These added difficulties make excavation along the shoreline a less attractive option. Therefore, the excavation process option will be retained for only the land-based areas..." The description for Alternative S-3 (p. 5-6, 3rd bullet item) states that the cost estimate for the shoreline revetment includes disposal of 6,000 cubic yards of contaminated sediment. Please reconcile the apparent contradiction. (See also related comment re. Appendix D, p. D-12.) | • Please refer to the responses to EPA specific comment 45 and DTSC specific comment 61. |
| 18. | 4-20 | Page 4-20, Containment, Fourth bullet item. States "All existing or newly installed covers will need to be maintained." The maintenance costs associated with existing covers appears to have been omitted from the pertinent cost estimates in Appendix D. In addition, the Navy should develop performance standards for the maintenance of the cap and potential subsurface repair activities as part of the TMSRA or Proposed Plan. The details of how the Navy will comply with the performance standards should be written into the Remedial Design documents and then compliance documented in the Remedial Action Close-Out Report. | • Please refer to the response to DTSC (Lanphar) specific comment 57. The performance standard proposed is: "Where covers are needed, areas will be covered with a durable material that will not break, erode, or deteriorate such that the underlying soil becomes exposed."<br>• Maintenance costs for repairs of original covers (for example, to repair erosion damage) are included on Tables D-4B and D-5B. |
| 19. | 4-21 | Page 4-21, No Action Alternative. States "Groundwater would be left as-is without implementation of any institutional controls, containment, removal treatment, monitoring, or other mitigating actions." If no monitoring will be performed, then the cost estimate (Appendix D) for the "no action" alternative should include abandonment of all existing groundwater monitoring wells. | • The no-action alternative is required by NCP to provide a baseline to which other alternatives are compared. The no-action alternative evaluates the potential risks if no further action was conducted at the site. No change to the report is proposed from this comment. |
| 20. | 4-21 | Section 4.3.2.2, Page 4-21. This section should include a description of vapor mitigation system installation and restrictions on disturbing such a system under item "b" on page 4-22. | • The following text will be added to Section 4.3.2.2 on page 4-22 under the heading "*Additional Land Use Restrictions Relating to Groundwater and Associated VOC Vapors at Specific Locations within Parcel B.*"<br>• "*The restricted land uses set forth above must be approved by the FFA Signatories in accordance with the 'Covenant to Restrict Use of Property,' Quitclaim Deed, and Parcel B RMP prior to such use of the* |

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| | | | *property within the Area Requiring Institutional Controls (ARIC) for groundwater and associated VOC vapors in order to ensure that the risks of potential exposures to VOC vapors are reduced to acceptable levels that are adequately protective of human health. This can be achieved through engineering controls or other design alternatives which meet the specifications set forth in the ROD amendment, RD reports, LUC RD report, and Parcel B RMP. The Parcel B RMP shall provide for adequate soil, vapor, and groundwater sampling and analysis for VOCs. Initially, the ARIC will include all of Parcel B. Institutional controls will be required for an entire redevelopment block if any portion of that block is affected by the potential lateral extent of vapor intrusion. The ARIC may be modified by the FFA Signatories as the groundwater contaminant plume that is producing unacceptable vapor inhalation risks is reduced over time."* |
| 21. | 4-23 | Page 4-23, Passive Groundwater Treatment. States "Passive groundwater treatment includes the process options of groundwater monitoring and natural recovery." The term "treatment" is typically associated with active measures, such as pump-and-treat systems or in-situ or ex-situ treatment using chemical additives. We therefore recommend using the industry standard terms of "monitored natural alternation" (MNA) in lieu of "natural recovery." It should also be noted that MNA is only appropriate for compounds that are known to naturally degrade in the environment (e.g. petroleum hydrocarbons, volatile organic compounds) under favorable conditions, and that MNA typically involves a greater level of effort and cost than typical groundwater monitoring. MNA is not considered appropriate for inert compounds such as metals (e.g., mercury, chromium VI). | • Please refer to the response to EPA specific comment 46 on the description of natural recovery, MNA, and groundwater monitoring.<br>• Please refer to the responses to EPA specific comment 61 and DTSC specific comment 58 on groundwater monitoring for mercury. |
| 22. | --- | Table 4-1. This table states that included in institutional controls shall be "criteria during and after future development to assure that mitigated exposure conditions are maintained such as covers, barriers, or other engineering controls." First, this task is long-term O&M associated with the remedy and not an institutional control. Second, costs associated with this action do not appear to be included in the cost estimate. | • The repair of asphalt surfaces (for example, from erosion or seismic disturbance) is considered an operation and maintenance (O&M) activity. The cost for maintaining the asphalt is included in the O&M costs for Alternatives S-4 and S-5 (see Tables D-4B and D-5B). Asphalt repair costs are included for 10 years to account for the majority of the redevelopment build out. Requirements in Covenants to Restrict Use of Property or Quitclaim Deeds that regulate future breaches of the cover for |

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| | | | redevelopment purposes are considered institutional controls. O&M costs do not include installation or repair of replacement covers placed during development. |
| 23. | --- | Table 4-2. The description of Institutional Controls as a GRA, remedial technology type and process option is somewhat confusing. Under Table 4-2, Screening of General Response Actions and Process Options for Groundwater, the use of vapor barriers for new construction is noted as an option under the IC description, but the description also suggests prohibiting certain types of construction and development. The use of vapor barriers as an IC should allow for sensitive land use development because exposures would be mitigated. The descriptions in Table 4-2 indicate land use restrictions prevail over use of a vapor-barrier-based IC. Sources for Table 4-2 need to be updated to include EPA 2000a, EPA 2004, and IRTC 1999. (See also related comment recommending referring to vapor barriers as an "engineering control.") | • The statement "prohibits certain types of construction and redevelopment based on designated land use and must be in accordance with land use restrictions" in the description of institutional controls on Table 4-2 is intended to refer to the more general case of redevelopment, not specific to vapor controls. For example, residential construction would not be allowed in areas designated for open space land use without review and approval by the FFA Signatories. In this sense, land use restrictions take precedence over vapor controls, but types of construction that are consistent with the planned reuse would not be restricted, so long as the proposed construction meets the requirements related to mitigating vapor intrusion. Please refer to the response to City specific comment 20 for more details about vapor controls.<br>• References for EPA 2000a, EPA 2004c, and ITRC 1999 are listed in the references on Table 4-3 and will be added to Table 4-2.<br>• Please refer to the response to City specific comment 12 for discussion of vapor controls as engineering controls. |
| 24. | --- | General Comment on Section 5.0. It is difficult to reconcile the grids that had sample results that exceeded remedial goals (Table 3-22) with the grids that have excavation proposed for remediation (Table 5-1). Table 5-1 should be revised to include information on the chemicals that exceed remediation goals, along with the soil alternative information.<br>See comment to Section 5.2.3 (below), which indicates that excavation is not proposed for multiple grids with lead or organics in soil that exceed remediation goals. Table 5-1 does not provide the rationale for why no excavation is proposed for these other grids and Section 5.0 does not appear to include the rationale for why excavation was not proposed.<br>We suggest adding a table listing all grids with elevated lead and organics and then identifying which grids will not be excavated and the rationale for not requiring excavation. | • Please refer to the response to City specific comment 30 below. |

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| 25. | 5-1 | Page 5-1, §5.1 – Development of Remedial Alternatives, Second Paragraph. States "Various institutional controls are also integrated with each alternative to assure that RAOs and ARARs are satisfied." In subsequent sub-sections, the ICs are not integrated with each alternative; it is left at least partially to the transferee to develop the specific ICs. Therefore, without at least a description or listing of the specific ICs that would be required for each alternative, it is impossible to evaluate whether or not a particular alternative is protective in the long term or meets ARARs. | • The list of institutional controls contained in Section 4.3.2.1 is comprehensive and provides one location within the TMSRA for information on institutional controls. Listing of all institutional controls for each alternative would repeat many institutional controls several times and may make the TMSRA more confusing. |
| 26. | --- | Section 5.1.2 – Alternatives for Groundwater. This section refers to Section 4.3 for more detail about ICs, but no discussion of vapor barriers and/or passive ventilation systems is provided in Section 4.3. | • Please refer to the response to City specific comment 20 for more details about vapor controls. |
| 27. | 5-2 | Page 5-2, Alternatives Developed for Soil. It is not clear exactly how each of the alternatives will address each of the risks identified in the Health Risk Assessment. Therefore, it is difficult to evaluate (Section 6.0) whether a particular alternative meets, for example, the protectiveness criterion. We recommend that the linkage between distinct risks (or categories of risk) be clearly and explicitly carried through the document from Section 3.0 to Section 6.0. | • Table 5-1 lists all redevelopment blocks with COCs exceeding remediation goals and describes how each alternative will address those blocks. Please refer to the response to City specific comment 30 for additions to Table 5-1 and Section 5.2.3. |
| 28. | 5-2 | Page 5-2, Alternative: S-2: Institutional Controls and Shoreline Revetment. States "Alternative S-2 uses institutional controls and constructing a shoreline revetment that, together, will meet all ARARs and RAOs." A listing of ICs envisioned for this alternative is needed to fully evaluate this alternative in Section 6.0.<br><br>The cost estimates presented in Appendix D include extremely minimal costs for ICs. The only items included are signage, deed restrictions, preparation of the LUC RD, and preparation of the FOST. Additional items that should be included (as well as the cost for these items) are: additional public protection measures such as fencing and more effective (than exist currently) security measures; preparation of the Risk Management Plan the costs of implementing the LUCs and enforcing the deed restrictions; creation and long-term maintenance of a GIS database containing all of the analytical data for the parcel. | • Appendix D will be modified to include estimates for future Navy costs related to implementation of institutional controls.<br><br>• Please also refer to the response to City specific comment 39, below. |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 29. | 5-2 | Page 5-2, Alternative S-3: Excavation, Methane Source Removal, Disposal, Institutional Controls, and Shoreline Revetment. "This alternative will provide a more permanent remedy to reduce the volume and toxicity of contaminants where excavation is feasible. The ICs under this alternative would be used to prevent exposure to potential unacceptable risk posed by other COCs in soil (that is, the ubiquitous metals at concentrations above remediation goals)." Excavation and disposal will not reduce the volume and toxicity of contaminants; mobility of contaminants may be reduced by disposal at an appropriate facility, as opposed to leaving (uncovered) contaminated soil in an uncontrolled environment and that concept should be clearly stated here.<br><br>ICs could be used to prevent exposure to ubiquitous metals at concentrations above remediation goals. A listing of ICs envisioned for this alternative is needed to fully evaluate this alternative in Section 6.0. | • Section 5.1.1 will be revised as follows: "Alternative S-3 consists of...This alternative will provide a more permanent remedy to ~~reduce the volume and toxicity of~~ *remove* contaminants where excavation is feasible. The institutional controls..."<br><br>• The rating for "Reduction of Toxicity, Mobility, or Volume through Treatment" for Alternative S-3 will be changed to "poor" based on EPA specific comment 67.<br><br>• The list of institutional controls contained in Section 4.3.2.1 is comprehensive and provides one location within the TMSRA for information on institutional controls. Listing of all institutional controls for each alternative would repeat many institutional controls several times and may make the TMSRA more confusing. |
| 30. | --- | Section 5.2.3 – Alternative S-3: Excavation, Methane Source Removal, Disposal, Institutional Controls and Shoreline Revetment. This section includes identification of areas proposed for excavation, which include soil excavation for lead at B3415 (Redevelopment Block 8) and at B3426 (Redevelopment Block 9), as well as excavation for organic compounds at B4716 (Redevelopment Block 15) and the methane source excavation at B1031 (Redevelopment Block 3). As noted in Section 5.1.1, Alternatives Developed for Soil, Page 5-2, "Areas where organic compounds (including the methane source) and lead are COCs will be excavated to remediate these COCs to remediation goals."<br><br>There are several grid areas identified in Table 3-22 as having COCs in soil at concentrations greater than remediation goals that were not included in the proposed excavation areas in Section 5.2.3. The following grids should be either included in the proposed excavation areas or the rationale should be included stating why the specific grids were not proposed for excavation<br><br>Redevelopment Block 2<br><br>• B1042 – lead and dibenz(a,h)anthracene | • The last bullet in Section 5.2.3 will be expanded as follows. "All other areas that present potential unacceptable incremental risk...addressed through the use of institutional controls. *The following bullets provide specific examples.*"<br><br>o *Excavation is not proposed for any areas at Redevelopment Blocks 2, 3, and BOS-1 based on the presence of debris fill in those areas and the known difficulties of attempting removals in debris fill areas.*<br><br>o *Excavation is not proposed beneath existing buildings; building slabs and foundations act as adequate covers (grid B1626 and grids at Redevelopment Block 8).*<br><br>o *Excavation is not proposed to remove contaminants present at 10 feet bgs; the overlying soil acts as an adequate cover (grids B4017, B4520, AX04, and AY03).*<br><br>• Similar notes will also be added to Table 5-1. |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | • B0366 – lead<br>• B0438 - lead<br>Redevelopment Block 3<br>• B1028 – lead<br>• B1029 – Aroclor 1260, dieldrin and heptachlor epoxide<br>• B1128 – lead<br>• B1129 – Aroclor 1254, Aroclor 1260, Beta-BHC, dieldrin, and heptachlor epoxide<br>• B1130 – lead, benzo(b)fluoranthene, benzo(k)fluoranthene, Aroclor 1260, dieldrin, and heptachlor epoxide<br>• B1131 – benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene<br>• B1228 – lead<br>• B1230 – lead, Aroclor 1260, and dieldrin<br>• B1231 – benzo(a)anthracene<br>• B1328 – Aroclor 1260<br>• B1330 – benzo(a)anthracene, naphthalene, Aroclor 1254, dieldrin, and heptachlor epoxide<br>Redevelopment Block 6<br>• B1626 – PCE in soil at excess cancer risk >1 x 10-6<br>• Redevelopment Block 8<br>• B2723 – TCE | |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | • B2724 – TCE<br>• B2823 – TCE<br>• B2824 – TCE<br>• B2923 – TCE<br>• B2924 – TCE<br>Redevelopment Block 12<br>• B4017 – benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene<br>• B4520 – Aroclor 1260<br>Redevelopment Block 15<br>• AX04 – benzo(a)pyrene<br>• AY03 – benzo(a)anthracene and benzo(a)pyrene<br>Attached are flowcharts illustrating examples that follow individual risk grid areas through the process outlined in various portions of the TMSRA and then determining whether the grid is slated for excavation or not. These flowcharts are intended for illustrative purposes only; however, it is recommended that some sort of guidance, both in the text of the document itself and possibly with the visual aid of some type of "generic" flowchart, be provided so that the reader can readily follow the logic being applied to each grid area that has an exceedance.<br>As another example of where additional clarification (text) is needed, it is noted that some of the CERCLA contaminants are in the IR7/18 area. If the area of IR7/18 has characteristics that make the excavation of CERCLA contaminants infeasible then the characteristics should be described and that area should be specifically identified as an area where contaminants at levels above the remediation goals will not be excavated. | |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| 31. | 5-3 | Page 5-3, Alternative S-4: Covers Methane Source Removal, Institutional Controls, and Shoreline Redevelopment. "The institutional controls are discussed in Section 4.3, would be implemented parcel-wide, and would be more fully described in an LUC RD document." Please see our specific comments on Section 4.3 and Institutional Controls. | • Please refer to the responses to specific comments on Section 4.3. |
| 32. | 5-3 | Page 5-3, Alternative S-5. Same comment as above for Alternative S-4. | • Please refer to the responses to specific comments on Section 4.3. |
| 33. | 5-4 | Page 5-4, Alternative GW-2 and GW-3A and GW-3B. Same comment as above for Alternative S-4. | • Please refer to the responses to specific comments on Section 4.3. |
| 34. | 5-11 | Page 5-11, re. Alternatives GW-3A and GW-3B, last bullet item. States "If, during this monitoring, VOCs are detected along the boundary between Parcels B and C at concentrations that require action, the remedies proposed for the IR-25 plume under the Parcel C FS would be pursued." It would be appropriate to provide a very brief description of the possible IR-25 plume remedies here for completeness. | • The remedies proposed for the IR-25 plume are expected to be similar to those presented for groundwater in the TMSRA. Alternatives have not been finalized for Parcel C. No change to the text is proposed from this comment. |
| 35. | 6-5 | Page 6-5, §6.1.2.4, Alternative S-2, Reduction of TMV. States, "The exposure to COCs that present a potential unacceptable risk would be eliminated because the institutional controls include maintaining the fences and signs as well as maintaining the covers." It is unclear how the cost estimates presented in Appendix D include any cost for maintaining fences, and it appears that the cost of maintaining existing covers has not been included. | • The costs for maintaining the asphalt covers and shoreline revetment are included on Tables D-4B, D-4C, D-5B, and D-5C. Only Navy costs related to O&M of the original covers are included (for example, to repair erosion); costs for replacement covers or repairs to replacement covers placed during redevelopment will not be included.<br>• The cost estimates assume that signs would be sufficient to restrict access. The LUC RD will evaluate appropriate ICs and the remedial design will evaluate engineering controls. |
| 36. | --- | Section 5.3.2. This section refers to Section 4.3 for more detail about ICs, but no discussion of vapor barriers and/or passive ventilation systems is provided in Section 4.3. This section indicates that "institutional controls would be in place where there is potential unacceptable risk from the vapor intrusion pathway and require engineering controls for all new buildings constructed in redevelopment blocks where groundwater plumes may present potential unacceptable risk from the vapor intrusion pathway." Since this sentence refers to "unacceptable risk" rather than unacceptable | • Please refer to the response to City specific comment 26.<br>• The term "unacceptable risk" used in Section 5.3.2 means the same as stated in Section 3.0: concentrations of COCs above remediation goals. No change to the report is proposed from this comment. |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | risk as noted in Section 3.0 of the TMSRA or groundwater concentrations greater than the remediation goals outlined in Table 3-18, is the assumption that "unacceptable risk" will be determined based on other data and a separate evaluation? This could include a re-evaluation of the extent of the groundwater plume based on any new data collected or based on future soil gas data that could be collected to confirm the presence of VOCs at concentrations that would represent potential vapor intrusion risks, which is consistent with the 2005 *DTSC Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. If so, these options should be outlined accordingly. | |
| 37. | --- | Figure 5-6. Groundwater flow directions should be indicated on this figure. | • Groundwater flow directions are shown on Figure 2-5. The TMSRA is not intended to provide a comprehensive groundwater monitoring plan. Please refer to Parcel B groundwater monitoring reports for additional details on groundwater flow directions. No change to the figure is proposed from this comment. |
| 38. | A-38 | Risk Characterization for Residential and Industrial Exposure to Groundwater, Section A7.2, Page A-38. The text in the first bullet states that the screening levels used for evaluation of risks associated with vapor intrusion are based on generic attenuation factors that assume minimum reduction of contaminant concentrations. While the use of screening levels may be appropriate for determining whether further evaluation is needed, they may not be appropriate for estimating site-specific risks and hazards. At a minimum, further discussion is needed here to describe whether actual site-specific conditions are consistent with those used in the development of the screening-level attenuation factors, and why the expected likely future residential construction would not be sufficiently different from the assumptions in the screening level analysis to justify site-specific modeling to estimate contaminant concentrations in indoor air. | • Please refer to the response to City comment number 4. |
| 39. | --- | Appendix D General Comment. General Comment: The costs included in the Appendix D tables for institutional controls (ICs) (including land use controls (LUCs) and engineering controls (ECs)) as well as for long-term operations and maintenance (O&M) appear to be low and/or incomplete. | • Responses related to each cost item are listed separately below. Appendix D will be modified to include estimates for future CERCLA response costs incurred by the Navy related to implementation of institutional controls. |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | At a minimum, IC and O&M costs should include the following items, as appropriate to each remedial alternative:<br>• Prepare Deed Restrictions<br>• Enforcement of Deed Restrictions<br>• Maintain Signage for Public Protection (all alternatives)<br>• Land Use Controls Remedial Design (LUC RD)<br>• Land Use Covenant between Navy and DTSC<br>• Preparation of FOST<br>• Long-term Operation and Maintenance associated with soil caps (where applicable)<br>• Actions to address soil cap during future development – installation<br>• Actions to address soil cap during future development – review<br>• Actions to address soil vapor during future development – installation<br>• Actions to address soil vapor during future development – review<br>• Dewatering Plans prepared and submitted during development – review<br>• Preparation and approval of Ordinance and Implementing Regulations by CCSF. The Ordinance and Regulations would allow DPH to assume responsibility for the day to day review and approval of plans and permits that verify compliance with the standards in the Risk Management Plan<br>• GIS/Database management and updates for environmental data and ICs<br>• Preparation of a Risk Management Plan (RMP) to guide soil and groundwater management and IC maintenance during redevelopment | • Costs incurred by the Navy for preparing and enforcing deed restrictions will be added to Appendix D.<br>• Costs incurred by the Navy related to signage are included in the current estimates.<br>• Costs incurred by the Navy to prepare the LUC RD will be added to Appendix D.<br>• Costs incurred by the Navy to prepare the land use covenant and FOST will be added to Appendix D.<br>• Long-term operation and maintenance (O&M) costs incurred by the Navy for covers are included in the current O&M estimates. Only costs related to O&M of the original covers are included (for example, to repair erosion); costs for repairs of original covers as a result of redevelopment activity; costs of replacement covers installed in the course of redevelopment; and costs of repairs to replacement covers placed during redevelopment will not be included.<br>• Costs incurred by the Navy for actions related to future redevelopment including review, oversight, or installation of soil covers, vapor controls, and dewatering will be included.<br>• Costs incurred by non-Navy entities for preparing ordinances and regulations are not integral components of the remediation alternatives and no costs will be provided.<br>• Costs incurred by the Navy to prepare a GIS and data management system will not be added to Appendix D. Data management is an overall program cost for the Navy and not apportioned to HPS or Parcel B in particular. The Navy already has GIS and data management systems in use (NEDD/NIRIS).<br>• Costs incurred by the Navy during preparation of the RMP by the City will be provided. |

**TABLE 5: DRAFT RESPONSES TO COMMENTS FROM THE CITY AND COUNTY OF SAN FRANCISCO ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

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| | | • Regulatory oversight of RMP and ordinance implementation | • Costs incurred by the Navy during oversight of the RMP will be provided. |
| 40. | --- | Tables D-2B, D-3B, D-4B, D-5B, D-7B, D-8B, and D-9B – All Alternatives. The purpose of the "Annual Drive-By Inspection" is not clear. Is this task limited to inspection of the signage (signage is the only physical institutional control proposed for all alternatives)? This task should not be confused with long-term O&M inspections associated with the remedy. | • The "Annual Drive-by Inspection" is intended to support the 5-year review in monitoring the effectiveness of the remedy, including ICs, covers, etc. Annual inspections may also support the requirements of the LUC RD. No change to the report is proposed from this comment. |
| 41. | 4-17 | Page 4-17, All Alternatives. Lists several land use requirements that will require the attention of the Navy and DTSC, including review, approval, and follow-up of submitted SMPs and facilitation of a covenant to restrict property use. The long-term costs associated with the "review, approval, and follow-up of submitted SMPs" do not appear to be included in the estimated costs. DTSC-invoiced costs associated with this task also do not appear to be included in the cost estimate. In addition, if everyone agrees that CCSF should play a role in this review and approval process, then the costs for the CCSF need to be included in the cost estimate. | • The concept of a soil management plan has been incorporated into a document currently known as a risk management plan. Preparation of a RMP and oversight of the RMP implementation are not integral components of the remediation alternatives and no costs will be provided for these activities. Also refer to the response to City specific comment 39. No change to the report is proposed from this comment. |
| 42. | --- | Tables D-2B, D-3B, D-4B, D-5B, D-7B, D-8B, and D-9B – All Alternatives. The "Shoreline Revetment Inspection" task has been improperly listed as an institutional control. This task is really long-term O&M associated with placement of the revetment.<br><br>Table D-2B suggests the O&M costs associated with ICs to be approximately $134,000. Lennar's experience at Mare Island has indicated that costs associated with monitoring of ICs, including inspections, permit tracking, annual and 5-year review reports, DTSC and EPA oversight costs, as well as costs to local government, is projected at approximately $5 million for a 450-acre area. | • The "Shoreline Protection Inspection" is not listed as an IC, but is intended to support the 5-year review in monitoring the effectiveness of the remedy and to identify areas that may need maintenance and repair.<br><br>• The costs for inspection and 5-year review are based on engineering judgment, using the costs for conducting a 5-year review at Hunters Point in 2003. |
| 43. | --- | Table D-4B (Soil Alternative S-4, Cover) and Table D- 5B (Soil Alternative S-5, Cover and SVE). The long-term operation and maintenance costs associated with these alternatives do not appear to be included in the cost estimates. Long-term O&M for a soil cover would typically include a periodic inspection, provisions for cover repair, and reporting. Long-term O&M for an SVE system would include system monitoring, routine repairs, | • The costs for asphalt maintenance and annual inspections are included on Tables D-4B and D-5B, under "Asphalt Maintenance Year 10" and "Annual Drive-by Inspection." O&M costs also include inspection and repair of the shoreline revetment (under heading "10 Year Shoreline Protection Inspection"). Asphalt repair costs are included for 10 years to |

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| | | replacement of carbon (if necessary), reporting, etc. | account for the majority of the redevelopment build out. O&M costs do not include installation or repair of replacement covers placed during redevelopment.<br>• It is assumed that the SVE system would operate for 1 year (Section D6.4, assumption number 10). Therefore, the costs to operate the SVE system are included in the capital costs (Table D-5A). |
| 44. | --- | Table D-4A (Capital and Labor Cost Estimate Alternative S-4), Table D-4B (O&M and Periodic Cost Estimate, Alternative S-4), Table D-5A (Capital and Labor Cost Estimate Alternative S-5), Table D-5B (O&M and Periodic Cost Estimate, Alternative S-5). Capital costs for cover under S-4 and S-5 (Table D-4A and Table D-5A) refer to installation of a 4-inch asphalt layer over the applicable redevelopment blocks (except the three open space blocks). O&M costs are included for the new covers to be installed under Alternative S-4 and S-5, but no O&M costs for Redevelopment Blocks 1, 4, 5, 16 and BOS-2, which reportedly have existing covers. As noted in Section 5.1.1 (Alternatives Developed for Soil, Page 5-3), "the need for upgrades or repairs to existing covers would be assessed in the remedial design and implemented for this alternative as necessary." Section 4.3.2.1, Evaluation of Applicable Soil Process Options (Page 4-20) indicates that "existing asphalt can be renovated with an asphalt seal coat, and concrete surfaces and building floors can be patched so long as the patches and seals adequately break the pathway." Because any asphalt existing cover will either require the same O&M as the new asphalt cover or the patching and sealing referenced in Section 4.3.2.1, a general estimate of O&M for the existing cover should be included in Tables D-4B and D-5B. | • The Navy proposes covers parcel-wide.<br>• O&M costs will be added for maintenance of all asphalt covers. Only Navy costs related to O&M of the original covers are included (for example, to repair erosion); costs for replacement covers or repairs to replacement covers placed during redevelopment will not be included. |
| 45. | D-12 | Page D-12, §6.1.18, Third bullet item. States "Existing beach material will be dredged for offshore work... The dredged material will be sampled and disposed of offsite as a non-hazardous waste." This is inconsistent with the third bullet item on Page 5-6, which states that "the cost estimate for the shoreline revetment includes disposal of 6,000 cubic yards of contaminated sediment." The reader should be referred to (i.e., give document title and date) the historical data that has been collected indicating whether or not the sediment off of Parcel B is contaminated. | • The third bullet on Page 5-6 will be revised with the following text: "...includes disposal of 6,000 cubic yards of ~~contaminated~~ sediment *to establish appropriate grades and to allow placement of erosion control materials at appropriate elevations relative to sea level.*" Please also refer to the response to DTSC (Lanphar) specific comment 61. |

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| 46. | --- | Table D-2B, Alternative S-2. Costs include an annual drive-by inspection ($5,200 annually as well as a 5-year report on site inspection $77,573 each). What is the scope and purpose of these site inspections? Inspection of signage? What about the annual costs of legal controls? | • Please refer to the responses to City specific comments 40, 42, and 43. |
| 47. | --- | Table D-3B, Alternative S-3. Same comments as above for Table D-2B. | • Please refer to the responses to City specific comments 40, 42, and 43. |
| 48. | --- | Table D-4B, Alternative S-4. Considering that Parcel B is entirely paved under this alternative, what is the scope and purpose of the annual inspections? How is it different from/same as scope for Alternatives S-2 and S-3? What about the annual costs of legal controls? | • Please refer to the responses to City specific comments 40, 42, and 43. |
| 49. | --- | Table D-5B, Alternative S-5. Same comments as above for Table D-4B. | • Please refer to the responses to City specific comments 40, 42, and 43. |
| 50. | --- | Table D-7B, Alternative GW-2. Per-event Report Preparation cost of $9,792 appears to be very low; will this report include text and figures, or be only a "data dump"? Close-out report cost of $8,960 also appears to be very low. The Scope of Annual drive-by inspections and 5-year site inspections for the groundwater alternatives (as compared to soil alternatives) should be clarified. | • The costs for preparation of the groundwater monitoring report will be reviewed based on costs for recent quarterly monitoring reports, and adjusted as necessary.<br>• The annual drive-by inspection is intended to support the 5-year review in monitoring the effectiveness of the remedy. |
| 51. | --- | Table D-8B, Alternative GW-3A. Same comments as above for Table D-7B. | • Please refer to the response to City specific comment 50. |
| 52. | --- | Table D-9B, Alternative GW-3B. Same comments as above for Table D-7B. | • Please refer to the response to City specific comment 50. |
| 53. | --- | General Comment on future decision process for VOCs in groundwater. Unlike the majority of the soil, the groundwater with VOC contamination will undergo further treatment. After the remedial action is completed the areas that have been treated will be defined and the areas that require engineering controls (vapor barriers, passive venting, active venting etc.) will need to be defined. The process for defining these post remedial actions areas should be spelled out in the TMSRA, Proposed Plan, or LUC RD. Then the maps defining the areas still requiring engineering controls after remediation activities have been completed, based on this pre-approved | • Areas requiring engineering controls will be identified in the remedial design. Institutional controls will be identified in the LUC RD. The remedial design would require that construction is conducted in a manner that is protective of human health and that the exposure of residents to VOCs in groundwater would be prevented, possibly through the use of vapor controls or other engineering controls. Please also refer to the response to EPA specific comment 53. |

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| | | process, should be presented and approved in the Remedial Action Close-Out Report.<br><br>The steps in the pre-approved process might be as follows:<br><br>a. Design and implement groundwater treatment through the remedial design and remedial action process.<br><br>b. Document the area of treatment and reduction of contamination in the Remedial Action Close-Out Report with maps showing the size of the plume (pre- and post-remediation). Use an agreed upon methodology (number and timeframe of sampling events) to properly document the post-treatment extent of the plume.<br><br>c. Use the DTSC guidance to draw a 100-foot buffer around the post-treatment plume and mark that area as the minimum area that will require soil vapor-related engineering controls. (The area(s) set forth in TMSRA Figure A-8 are overly conservative.)<br><br>d. The determination of the area requiring controls at the time of the publication of the Remedial Action Close-Out Report will be documented in that report. There would be an agreement established on how the minimum area would relate to the redevelopment blocks and therefore what area would actually end up with engineering controls.<br><br>e. The report will also document the procedure that someone can undergo if they wish to change the area that is designated as requiring engineering controls. The procedure would be essentially as written above, however the approval process would be with the Navy's designee (probably DTSC or its designee).<br><br>The process generally described above may be included either in the TMSRA or a later document, but it should be agreed upon by the various parties and documented prior to transfer of Parcel B. | |

## TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA

The table below contains the responses to comments received from Arc Ecology on the "Draft Parcel B Technical Memorandum in Support of a Record of Decision Amendment [TMSRA], Hunters Point Shipyard, San Francisco, California," dated March 28, 2006. Comments were submitted by Chein Kao (Arc Ecology) on June 15, 2006. Throughout this table, *italicized* text represents proposed additions to the TMSRA and ~~strikeout~~ text indicates locations of proposed deletions.

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| **General Comments** | | | |
| 1. | --- | This technical memorandum relies heavily on the conclusions of several previous studies. Yet the text does not provide any details of the previous studies nor does it make references to specific pages or provide clear examples of previous documents. While it is understandable not to repeat what has been published, it would be easier for the readers if, for example, some excavation results reported in the Construction Summary Report (CSR) or CSR Addendum (CSRA) can be presented to demonstrate chemical distributions are not in "particular pattern". | • Incorporation of confirmation soil sample results from individual excavations (such as is presented in the construction summary report) would not further support the description of the ubiquitous nature of metals in soil at Parcel B. The TMSRA is not intended to reproduce information that is available in existing reports. The references provided in the text are sufficient to allow readers to locate the cited information. No change to the report is proposed from this comment. |
| 2. | --- | There appears to be a conflict between changing the site conceptual model to one that advocates "distributions of chemicals are in no particular pattern" and continuing to use data collected based on the old model for risk assessment. In other words, if one believes the distributions of contaminants are in "no particular pattern" or are "unpredictable", then sample(s) collected within the risk grid can no longer be representative for the grid area for risk calculation. | • Remediation alternatives in the TMSRA address potential unacceptable risk caused by the widespread distribution of ubiquitous metals at Parcel B. The distribution of contaminants does not affect the risk calculation methodology; the grid only serves to divide the area into individual exposure areas for residential and non-residential exposures. The current HHRA methodology, including the grid system, is adequate to assess potential exposures and summarize risk estimates. Please also refer to the response to EPA general comment 1 and DTSC (Lanphar) specific comment 17. No change to the report is proposed from this comment. |
| 3. | --- | TMSRA defines both remediation goals and remedial action objectives based on incremental risks (which we disagree) and devoted over three thousand (3,000) pages of risk calculations for Human Health Risk Assessment (HHRA). However, the true driver for the change of ROD is the "ubiquitous nature" of certain chemical distribution in fill material. Risk calculations become irrelevant when it comes to final remedial alternative analysis since risks calculated based on samples within the risk grid becomes unreliable due to the unpredictable nature of chemical distributions. It is also the ubiquitous nature and unpredictable pattern of chemical distribution rendered excavation and off-site disposal as | • Details of the HHRA are confined to Appendix A and summary information included in the main text of the TMSRA is intended to be as concise and comprehensible as possible for the general audience for this report. The Navy will continue to work to simplify language and present technical material in ways that are understandable by the general public; however, no specific changes to the report are proposed from this comment. |

**TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

| No. | Page | Comment | Response |
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| | | primary remedial option impractical to implement. This left parcel-wide cover and institutional control the only feasible remedy to address the potential risks from soil. We suggest risk assessment sections in the TMSRA be removed from this report to make issues simpler and the document easier for readers to comprehend. | |
| 4. | --- | Remedial alternatives analysis in this document is basically an evaluation of a series of combined process options that progressively add various levels of protectiveness to the alternative. It does not provide a true comparison of alternatives that can satisfy the remedial action objectives without relying on duplicated protections. (i.e. combine excavation, cover, and institutional control into one general response action (GRA) is not a true alternative to another GRA with only cover and institutional control). | • The use of individual process options in more than one remediation alternative allows for flexibility in designing several alternatives that could successfully remediate Parcel B. Limiting remedial alternatives as described would likely result in only one alternative passing the alternatives screening. This would defeat the purpose of evaluating several, workable alternatives that is one of the objectives of the TMSRA. No change to the report is proposed from this comment. |
| **Specific Comments** | | | |
| 1. | --- | Public Summary, Executive Summary, and Section 1-1: "Parcel B has completed cleanup steps through ROD, Remedial Action, and Post-construction reporting." This statement should be deleted.<br><br>Navy published Post-construction report in the form of Construction Summary Report (CSR) and CSR Amendment (CSRA) dated September 8, 2004. Section 4 Conclusion of the CSRA states: "the RA (Remedial Action) at Parcel B is not complete." DTSC also stated in its comment letter for the CSRA " DTSC agrees with the Navy's general conclusion that remedial actions for Parcel B sites in the Construction Summary Report Addendum (CSRA) are not completed. However, the Navy does not present site-specific conclusions in the CSRA regarding the adequacy of each remediation to meet cleanup goals, the extent of residual contamination, and the risk posed by remaining contaminants. The CSRA comprises primarily data tables and figures." With the ROD pending amendment, the RA incomplete by the Navy's own account, and the post-construction report (CSRA) inadequate according to the regulator, the above statement in the Public Summary and Executive Summary is inaccurate and should be deleted. | • The remainder of the cited sentence "...however, updated knowledge of the site that became available during the remedial action indicates that modifications to selected soil and groundwater remedies should be considered to ensure long-term protectiveness" clearly indicates that there are on-going activities related to the ROD and remedial actions. No change to the report is proposed from this comment. |

**TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

| No. | Page | Comment | Response |
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| 2. | ES-1 | ES-1 Executive Summary:" The updated information about the ubiquitous nature of certain chemicals in soil and more comprehensive understanding of groundwater..." and page 2-17: The ubiquitous nature of metals in fill is much clearer now than in initial design of remedial action..."<br><br>TMSRA needs to provide more specifics in justifying the change of site conceptual model. It makes no reference to previous studies nor does it provide enough detailed explanation to demonstrate the disagreement between the original model and RA field results. Since this is "large part of the reason for the reevaluation presented in TMSRA..."(page 2-17), there should be a summary of soil remedial action conducted so far and provide clear evidences that field data from remedial actions is not in conformity with previously assumed model. | • Sections 2.1.3.1 (History of Soil Actions) and 2.3.1 (Updated Characterization of Soil and Groundwater, Overview of Soil) provide information about the updated understanding of soil contamination at Parcel B. The discussion of the widespread distribution of ubiquitous metals summarizes the evidence from field data that shows the need to modify the previous conceptual site model.<br><br>• Please refer to DTSC (Lanphar) specific comment 17 for discussion of additional text to explain changes to the conceptual site model. |
| 3. | ES-5 | ES-5 " The total risk results for soil show that many exposure areas exceed excess lifetime cancer risk threshold...Under the incremental risk evaluation fewer areas at Parcel B exceed cancer or non-cancer risk thresholds because metals below ambient levels (those considered by the Navy to be natural occurring) were excluded from risk analysis. ...Remediation goals were developed for each chemical of concern by comparing the highest concentrations that do not present unacceptable incremental risk with chemical-specific applicable or relevant and appropriate requirements..." and ES-6, "Remedial action Objectives for Parcel B soils are developed based on human health receptors and results of the incremental risk assessment."<br><br>Both Remediation goal and Remedial Action Objectives should be developed based on total risks instead of incremental risks. When comparing aerial photos of 1940's and 1980's, it is clear all land at Parcel B between 1940's shoreline and 1980's shoreline are created by imported material. Imported materials, by definition, are not considered to be natural occurring nor should chemicals in the imported material be considered ambient. Navy should address total risks posed by all material that are imported by Navy's activities. | • Total risk includes risk posed by all chemicals, including ubiquitous metals. The incremental risk addresses chemicals related to Navy activities. Remediation alternatives in the TMSRA are focused on cleaning up those chemicals related to Navy activities. Therefore, the TMSRA uses the incremental risk evaluation as the basis for alternative identification. However, remedial alternatives in the TMSRA are designed to also be protective of risks from ubiquitous metals, regardless of source.<br><br>• Please refer to the response to EPA general comment 5 concerning naturally occurring metals in fill materials.<br><br>• No change to the report is proposed from this comment. |

**TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

| No. | Page | Comment | Response |
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| 4. | --- | Soil Alternative S-2 is not a complete remedial alternative, as it does not address methane gas. | • Exposure to methane would be eliminated using institutional controls under Alternative S-2. No access would be permitted to the area affected by methane. No change to the report is proposed from this comment. |
| 5. | 2-3 | Page 2-3 Shoreline sediment investigation The text states, " Many samples at IR-26 were not collected because riprap interfered with sample collection (that is, no sediment present) ..." Navy interprets riprap interference of sample collection means no sediment present. Shoreline contaminations caused by contaminated soil eroded into bay water along shoreline is likely to be at the bottom of riprap. In order to determine if shoreline revetment is required at IR-26, soil (or sediments) at the bottom of riprap must be sampled. | • Additional sampling is not necessary to support the need for remedial action to address sediments along the shoreline. The remediation alternative proposed for the shoreline (revetment) will be uniformly applied to the entire shoreline. Consequently, additional sampling is not required for the remediation to be protective of ecological receptors. No change to the report is proposed from this comment. |
| 6. | 3-1 | Page 3-1 " An additional soil removal in 2004 and 2005 resulted in additional excavation and data collection"<br>Table 1-1 shows no further field excavation after Dec 2001. Please correct this discrepancy. | • Table 1-1 indicates steps in the CERCLA process. The excavations completed in 2004 and 2005 addressed fuel-related compounds and were not part of the CERCLA cleanup process. Consequently, there is no entry in Table 1-1 for the 2004 to 2005 excavation activity. No change to the report is proposed from this comment. |
| 7. | 3-1 | Page 3-1 "Lastly, HHRA was revised based on BCT agreements during 2003 and 2004." What was the BCT agreement for HHRA in 2003 and 2004? | • Section A2.0 (HHRA Methodology) provides the details of the risk assessment that were worked out with the BCT during 2003 and 2004. The paragraph following the cited sentence refers the reader to Appendix A for details of the HHRA methodology where the specifics are described. No change to the report is proposed from this comment. |
| 8. | 4-17 | Page 4-17, "The restricted land uses must be approved, at HPS Parcel B, by the Navy and DTSC prior to the start of construction of any buildings or structures on the listed land uses. The transferee shall request approval in accordance with the following process and criteria: ..."<br>The burden of compliance for long-term enforcement and maintenance of institutional control appears to be shifted from the Navy to the future landowners after land transfer and a new role was created for the Navy, along with DTSC, as an enforcer for land use restrictions. It is troubling that the Navy not only left contaminations in place, and burdened the community with additional maintenance requirements without compensation; now it wants to further assert approval authority over the | • Navy and DTSC will share in enforcement of institutional controls in accordance with the "Covenant(s) to Restrict Use of Property" and Quitclaim Deed(s).<br>• The Navy is continuing to work actively with the BCT and the City to resolve issues related to the content, implementation, enforcement, and funding of institutional controls. Appendix D will be modified to include estimates for future costs to be incurred by the Navy related to implementation of institutional controls.<br>• Please also refer to the response to City specific comment 39. |

**TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

| No. | Page | Comment | Response |
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| | | use of land. We have no objection to the enforcement of land use restrictions; however, any additional costs born from efforts to meet the requirements for Navy's and DTSC's approval should be paid for by the original responsible party. (The Navy should set up an account within its approval process to pay for the additional work required, such as soil management activities, new covers...etc. We feel since the Navy intends to shift the maintenance of cover to the new owners after redevelopment, the Navy should not benefit from property transfer without compensating the new owner for the future maintenance of the cover.) | |
| 9. | 4-19 | Page 4-19, "... the excavation process option will be retained for only the land-based areas contaminated by lead and organic compounds (including methane source area) that present potential unacceptable risks."<br><br>There should be clear definitions for "land-based areas" and "shoreline areas" so that areas the excavation process option is retained for can be later verified. | • Area proposed for excavation are clearly identified in Section 5.2.3. No change to the report is proposed from this comment. |
| 10. | 4-20 | Page 4-20, "Existing asphalt, concrete, and building will be considered as existing covers so long as they block the exposure pathway...where covers are needed, areas shall be covered with either a minimum 4 inches of asphalt or a minimum 2 feet of imported clean soil..."<br><br>Existing covers should also meet the minimum requirements, as do the new covers so there is a consistent parcel-wide cover. | • The text of the first bullet in this discussion of containment will be expanded as follows. "...patched so long as the patches and seals adequately break the pathway. *Rehabilitation of existing covers will be designed to meet the same minimum requirements as new covers.*" |
| 11. | 4-20 | Page 4-20, "the revetment includes two key features that allow it to isolate contaminated sediments (1) a geomembrane to prevent migration of fine-grained sediments into the bay, and (2) an erosion-control element such as riprap, gabion, articulated concrete mat, or concrete structure...".<br><br>While the key features were presented here, the elements to be used for the revetment are still to be selected in Remedial Design (RD). It is important to prescribe a measurable performance standard for the revetment in TMSRA to guide the design and to ensure compliance with remedial action objectives. | • The central objective is prevention of migration of sediment to the bay. The conceptual development of the revetment in the TMSRA is sufficient for evaluation as a remediation alternative. Detailed design calculations, specifications, and drawings to describe the structure or system to achieve the objective are beyond the scope of the evaluations in the TMSRA and will be completed during the remedial design. No change to the report is proposed from this comment. |

**TABLE 6: DRAFT RESPONSES TO COMMENTS FROM ARC ECOLOGY ON THE DRAFT PARCEL B TECHNICAL MEMORANDUM IN SUPPORT OF A RECORD OF DECISION AMENDMENT, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA (CONTINUED)**

| No. | Page | Comment | Response |
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| 12. | 4-20 | Page 4-20, "Shoreline enhancement was eliminated from consideration based on the difficulty installing a geomembrane along the IR-26 shoreline, where a large amount of riprap already exists. The geomembrane cannot be installed over the existing riprap. The process involved removing the existing riprap and then installing geomembrane is not significantly different from the shoreline revetment option..."<br><br>It is confusing as to what is considered to be shoreline enhancement. We agree it is not practical to install geomembrane over the existing riprap. As long as the same revetment option is installed on the entire shoreline along IR-07/18 and IR-26, it would provide a consistent approach for shoreline revetment. | • The revetment will be constructed along the entire shoreline of IR-07 and IR-26 at Parcel B. Shoreline enhancement was considered early in the evaluation process as a potential option that could more directly use the existing rip rap at IR-26 and, potentially, be less expensive. However, further evaluation indicated the necessity of the geomembrane to the success of the remediation and this caused shoreline protection to be eliminated from further consideration because the geomembrane cannot be installed over rip rap. No change to the report is proposed from this comment. |
| 13. | 5-1 | Page 5-1, "The Navy's strategy for soil remedial alternatives is to remove contaminated soil from the site by excavation and disposal wherever practical..."<br><br>Performance standards should be developed for soil remedial alternatives. "Removal contaminated soil ... wherever practical" does not meet remedial action objectives and is subject to wide ranges of interpretation. It makes final verification of this remediation very difficult. | • Remediation goals for soil excavation are presented in Table 3-17. The discussion in Section 5.1 is intended only as an overview. No change to the report is proposed from this comment. |
| 14. | 5-3 | Page 5-3, Alternative S-4: " Existing covers, such as buildings and asphalt parking lots are considered adequate for this alternative. New covers are considered for construction only in areas where there are no existing covers. The need for upgrades and repairs to the existing covers will be assessed in the remedial design and implemented for this alternative as necessary."<br><br>The existing covers should have the same quality and provide the same protection to be considered adequate. The need for upgrades and repairs of an existing cover should be based on the same minimum requirements for new covers. | • Please refer to the response to Arc Ecology specific comment 10. |

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| No. | Page | Comment | Response |
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| 15. | 5-6 | Page 5-6, "the extent of elevated concentration of methane will be delineated to identify the methane source material."<br><br>It is assumed that the delineation of methane source material will be done prior to the excavation instead of "investigation by excavation" method employed during last ROD. The criteria to determine the end point of delineation should be specified here to reach a consensus among stakeholders. | • Delineation of the source area will precede excavation. Delineation would occur to the remediation goal for methane, that is, 5 percent methane by volume in air. The text of Section 5.3.2 will be revised as follows. "The extent of the elevated concentrations of methane will be delineated *to the remediation goal for methane (5 percent by volume in air)* to identify the methane source material." |
| 16. | 5-7 | Page 5-7, New Covers<br><br>There should be a warning marker put in place prior to lay down the new cover. It provides a warning to the future users before they disturb the underlying contaminated soils. Generally a bright orange color cyclone fencing material or any type of plastic mesh will suffice. | • Identification of covers using the method described may not be practical considering the large amount of future disturbance that is likely to occur during redevelopment. Detailed, highly accurate maps using instruments based on the global positioning system or conventional land surveying techniques should be adequate to record the locations of covers and reestablish those locations if redevelopment activities change the land surface. No change to the report is proposed from this comment. |

## REFERENCES


Battelle, Blasland, Bouck and Lee, Inc., and Neptune and Company. 2005. "Final Hunters Point Shipyard Parcel F Validation Study Report, San Francisco Bay, California." May 2.

Beyer, W.N., E. Connor, and S. Gerould. 1994. "Estimates of Soil Ingestion by Wildlife." *Journal of Wildlife Management.* Volume 58. Pages 375-382.

CE2 Corporation (CE2). 2006. "Technical Memorandum for Contamination Delineation at Remedial Unit C5, Revision 1, Hunters Point Shipyard, San Francisco, California." November.

CE2-Kleinfelder Joint Venture. 2006a. "Parcel B Quarterly Groundwater Monitoring Report (October-December 2005) and Annual Report (2005), Hunters Point Shipyard, San Francisco, California." April.

CE2-Kleinfelder Joint Venture. 2006b. "Parcel B Quarterly Groundwater Monitoring Report (January-March 2006), Revision 0, Hunters Point Shipyard, San Francisco, California." August.

CE2-Kleinfelder Joint Venture. 2006c. "Parcel B Quarterly Groundwater Monitoring Report (April-June 2006), Revision 0, Hunters Point Shipyard, San Francisco, California." October.

Department of Toxic Substances Control. 2005. "Advisory on Methane Assessment and Common Remedies at School Sites." School Property Evaluation and Cleanup Division. June 16.

Eco Analysis, Inc. 1998. "San Francisco Bay Sediment Criteria Project Ambient Analysis Report." Prepared for: California Regional Water Quality Control Board, San Francisco Bay Region. March.

Engineering/Remediation Resources Group, Inc. and URS Corporation. 2004. "Final Cost and Performance Report, Zero-Valent Iron Injection Treatability Study, Building 123, Parcel B, Hunters Point Shipyard, San Francisco, California." June 25.

Innovative Technical Solutions, Inc. (ITSI). 2005. "Final Zero-Valent Iron Injection Treatability Study Report, Building 272, Parcel C, Hunters Point Shipyard, San Francisco, California." April.

ITSI. 2006. "Draft Phase III Soil Vapor Extraction Treatability Study Report, Building 123, IR-10, Parcel B, Hunters Point Shipyard, San Francisco, California." July.

Interstate Technology and Regulatory Cooperation. (ITRC). 1999. "Natural Attenuation of Chlorinated Solvents in Groundwater: Principles and Practices." September.

IT Corporation (IT). 1999. "Completion Report, Exploratory Excavations, Hunters Point Naval Shipyard, San Francisco, California." June.

Kleinfelder. 2005. "Draft October to December 2004, Twentieth Quarterly/Fifth Annual Groundwater Sampling Report, Parcel B, Hunters Point Shipyard, San Francisco, California." December 2.

Kleinfelder. 2006. "Draft July to September 2005, Twenty-third Quarterly Groundwater Sampling Report, Parcel B, Hunters Point Shipyard, San Francisco, California." April 6.

Long, E.R., D.D. MacDonald, S.L. Smith, and F.D. Calder. 1995. "Incidence of Adverse Biological Effects within Ranges of Chemical Concentrations in Marine and Estuarine Sediments." *Environmental Management.* Volume 19. Number 1. Pages 81-97.

Nagy, K.A. 2001. "Food Requirements of Wild Animals: Predictive Equations for Free-Living Mammals, Reptiles, and Birds." *Nutrition Abstracts and Reviews. Series B: Livestock Feeds and Feeding.* Volume 71, Number 10. October.

PRC Environmental Management, Inc. (PRC). 1995. "Draft Calculation of Hunters Point Ambient Levels, Hunters Point Annex, San Francisco, California." August 17.

PRC. 1996. "Parcel B Feasibility Study, Final Report, Hunters Point Shipyard, San Francisco, California." November 26.

San Francisco Bay Regional Water Quality Control Board (Water Board). 1998. "Staff Report: Ambient Concentrations of Toxic Chemicals in San Francisco Bay Sediments." May.

Water Board. 2004. "Water Quality Control Plan (Basin Plan) for the San Francisco Bay Basin." Available online at http://www.waterboards.ca.gov/sanfranciscobay/basinplan.htm

San Francisco Redevelopment Agency. 1997. "Hunters Point Shipyard Redevelopment Plan." July 14.

Shaw Environmental. 2005. "Final In Situ Sequential Anaerobic-Aerobic Bioremediation Treatability Study, Remedial Unit C5, Building 134, Installation Restoration Site 25, Hunters Point Shipyard, San Francisco, California." November 25.

SulTech. 2004. "Draft Parcel B Construction Summary Report Addendum, Hunters Point Shipyard, San Francisco, California." September 8.

Tetra Tech EM Inc. (Tetra Tech). 2001. "Final Technical Memorandum, Distribution of the Bay Mud Aquitard and Characterization of the B-Aquifer in Parcel B, Hunters Point Shipyard, San Francisco, California." February 19.

Tetra Tech. 2002a. "Draft Parcel B Construction Summary Report, Hunters Point Shipyard, San Francisco, California." November 18.

Tetra Tech. 2002b. "Wetlands Delineation and Functions and Values Assessment, Hunters Point Shipyard, San Francisco, California." December 2.

Tetra Tech. 2003a. "Parcel B Human Health Risk Assessment Methodology Technical Memorandum, Hunters Point Shipyard, San Francisco, California." January 14.

Tetra Tech. 2003b. "Final First Five-Year Review of Remedial Actions Implemented at Hunters Point Shipyard, San Francisco, California." December 10.

Tetra Tech and ITSI. 2004. "Metals Concentrations in Franciscan Bedrock Outcrops: Three Sites in the Hunters Point Shear Zone and Marin Headlands Terrane Subunits, Hunters Point Shipyard, San Francisco, California." March 17.

TPA-CKY Joint Venture. 2005. "Draft Final Site Closeout Report, Total Petroleum Hydrocarbon Program Corrective Action Implementation Soil Removal for Parcels B, C, D, and E, Hunters Point Shipyard, San Francisco, California." June.

U.S. Army Corps of Engineers (USACE). 2002. "Biota-Sediment Accumulation Factors: Hunters Point, California." July 1.

U.S. Department of the Navy (Navy). 1999. "Navy Policy for Conducting Ecological Risk Assessment."

Navy. 2004. Letter Summarizing Proposed Path Forward for the Parcel B Human Health Risk Assessment for Soil. From Keith Forman, Navy. To Michael Work, EPA; Tom Lanphar, DTSC; and Jim Ponton, San Francisco Bay Regional Water Quality Control Board. April 14.

U.S. Environmental Protection Agency (EPA). 1986. "Guidelines for Ground-Water Classification under the EPA Ground-Water Protection Strategy." Final Draft. December.

EPA. 1988. "CERCLA Compliance with Other Laws Manual, Draft Guidance." EPA/540/G-89/006. Office of Emergency and Remedial Response, Washington, DC. August.

EPA. 1989. "Risk Assessment Guidance for Superfund, Volume I: Human Health Evaluation Manual (Part A)." Office of Solid Waste and Emergency Response. EPA/540/1-89/002. December.

EPA. 1990. "Basics of Pump-and-Treat Groundwater Remediation Technology." EPA/600/8-90/003. March.

EPA. 1991. "Management of Investigation-Derived Wastes during Site Inspections." EPA/540/G-91/009. May.

EPA. 1992. "Supplemental Guidance to RAGS: Calculating the Concentration Term." Publication 9285.7-081. Office of Solid Waste and Emergency Response. Washington, D.C. May.

EPA. 1997. "Mercury Study Report to Congress, Volume III, Fate and Transport of Mercury in the Environment." EPA/452/R-97/005. December.

EPA. 1998a. "Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water." EPA/600/R-98/128. September.

EPA. 1998b. "Guidelines for Ecological Risk Assessment. Risk Assessment Forum." EPA/630/R-95/002F. Washington D.C.

EPA. 2000a. "Engineered Approaches to In Situ Bioremediation of Chlorinated Solvents: Fundamentals and Field Applications." EPA/542/R-00/008. July.

EPA. 2000b. The Office of Solid Waste and Emergency Response publication on land use controls. Available online at: http://www.epa.gov/oerrpage/superfund/action/ic/guide/index.htm

EPA. 2001. "The Role of Screening-Level Risk Assessments and Refining Contaminants of Concern in Baseline Ecological Risk Assessments." ECO Update. EPA publication 9345.0-14. Office of Solid Waste and Emergency Response. EPA/540/F-01/014. June.

EPA. 2002. "Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)." Draft. Federal Register. November 29, 2002. Volume 67, Number 230. Pages 71169-71172. Available online at: http://www.epa.gov/correctiveaction/eis/vapor.htm

EPA. 2004a. "EPA Region IX Preliminary Remediation Goals (PRG) 2004." Region IX PRGs Table 2002 Update, Including Memorandum. From Stanford Smucker, EPA Region IX Regional Toxicologist. To PRG Table Users. October 1. Available online at: http://www.epa.gov/region09/waste/sfund/prg/index.htm

EPA. 2004b. *ProUCL Version 3.0.* EPA Statistical Program Package. April. Available online at: http://www.epa.gov/nerlesd1/tsc/form.htm

EPA. 2004c. "Demonstration of Two Long-Term Groundwater Monitoring Optimization Approaches." Office of Solid Waste and Emergency Response. EPA/542/R-04/001b.

Vermeer, K., and N. Bourne. 1984. "White-Winged Scoter Diet in British Columbia Waters: Resource Partitioning with Other Scoters." D.N. Nettleship, G.A. Sanger, and P.F. Springer (Editors). *Marine Birds: Their Feeding Ecology and Commercial Fisheries Relationships*.

ATTACHMENT 1

## ATTACHMENT 1

Updates to the TMSRA executive summary, Section 1.0, and Section 6.0. Throughout this attachment, *italicized* text represents proposed additions to the TMSRA and strikeout text indicates locations of proposed deletions.

[Start of executive summary update. Following are revisions to sections of the executive summary]

### PURPOSE AND BACKGROUND OF TMSRA

Environmental activities at Parcel B were conducted under...and post-construction reporting. Parcel B has completed the steps through post-construction reporting (including the five-year review); however, information about the site that became available during the remedial action indicates that modifications to the selected soil and groundwater remedies should be considered. *Updated information includes items such as the ubiquitous nature of metals in soil across Parcel B, the presence of methane and mercury, the findings of the SLERA, changes in toxicity criteria, and findings from removal actions to address radiological contaminants. The five-year review (Tetra Tech 2003b) concluded that the remedy selected in the ROD (Navy 1997) needs to be modified to be protective in the long term. The BCT has extended the schedule of CERCLA activities (contained in the FFA) to evaluate potential modifications to the Parcel B remedy and support the preparation of this TMSRA.*

*A ROD amendment will be proposed for Parcel B by the Navy if the Navy determines that proposed changes to the selected remedy based upon the evaluations in the TMSRA will "fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost" as described in the NCP at 40 CFR 300.435(c)(2)(ii). For example, the consideration of parcel-wide covers to address soil contamination instead of excavation may represent a fundamental change in the scope of the remedy. For groundwater, addition of active groundwater treatment methodologies to the remedy may be a fundamental change in the scope.*

The updated information *mentioned above* ~~about the ubiquitous nature of certain chemicals in soil~~, *the need to update certain cleanup levels*, and the more comprehensive understanding of groundwater, together with the ~~currently~~ planned land use, indicate the need to *revise the conceptual site model, evaluate* ~~support~~ additional remedial actions, and *evaluate* amending the ROD. This TMSRA provides the support for the decisions *regarding remediation alternatives* ~~in an updated proposed plan and ROD amendment that will come later~~, in the same way that the FS supported the initial proposed plan and ROD. The TMSRA provides a practical path forward to *evaluate* ~~undertake~~ additional remedial actions that will support parcel transfer.

[No substantial changes to following sections "Hunters Point Shipyard Background" and "Parcel B History and Setting"]

## PARCEL B REMEDIAL AND REGULATORY ACTIVITIES SINCE THE 1997 RECORD OF DECISION

The Navy has conducted a number of remedial and removal actions since the ROD was signed in October 1997 (see adjacent box). These actions reduced or eliminated certain risks to human health and ecological receptors at Parcel B. The Navy prepared two explanations of significant differences that modified the remedy for soil in the ROD: one in 1998 that changed the maximum excavation depth to 10 feet, and one in 2000 that updated cleanup goals for soil. The Navy now has a better understanding of site conditions gained during the remedial actions that indicates additional remedies for protection of human health and the environment ~~may be appropriate~~ *should be evaluated and that the ROD should be amended. The five-year review (Tetra Tech 2003b) concluded that the remedy selected in the ROD (Navy 1997) should be modified to be protective in the long term. The BCT has extended the schedule of CERCLA activities (contained in the FFA) to incorporate modifications to the Parcel B remedy and support the preparation of this TMSRA.*

*Specifically, the excavation and off-site disposal remedy selected in the ROD would not be protective in the long term as it was originally envisioned because the conceptual site model that formed the basis for the remedy was incomplete. The discrete release of chemicals, known as the "spill" model, was the basis for the remedial action selected in the ROD. Although this conceptual model worked well at many areas of Parcel B, the spill model did not account for all areas where chemical concentrations exceeded cleanup goals. A group of metals related to the bedrock fill quarried to build HPS in the 1940s consistently exceeded cleanup goals across Parcel B. These metals are naturally occurring in the local HPS bedrock and were distributed throughout all parcels, including Parcel B, as HPS was built. The resulting distribution of metals concentrations in soil is nearly random across the parcel and the spill model for release does not apply.*

*In addition to identifying the ubiquitous nature of several metals in the bedrock fill, sampling and excavation during the remedial action found that the areas at IR-07 and IR-18 contained fill that contained a high proportion of demolition debris. The highly nonuniform distribution of chemicals within the debris fill also did not conform to the spill model and, consequently, excavations in this area often greatly exceeded their originally planned extents. Furthermore, methane was detected in soil gas at a small area of the debris fill at IR-07. In addition, radiological contamination is present at Parcel B that was not known during preparation of the ROD. The debris fill, methane, and radiological contamination created additional needs to update the conceptual site model.*

Updates to the risk assessment methodology and the associated risk estimates are also needed. *The toxicity characteristics of VOCs have been updated since the ROD was prepared. VOCs are now considered much more toxic via the inhalation pathway than when the ROD was prepared. Consequently, intrusion of VOC vapors into buildings is considered a more significant human health risk. The risk assessment also needs to be updated to incorporate new information available from the more than 6 years of groundwater monitoring data gathered at Parcel B, including the detection of chromium VI and mercury in groundwater.* This TMSRA report includes an update to the conceptual site model for soil and groundwater, a revised HHRA, and a

SLERA and, based on these updates, reevaluates remedial alternatives *addressing the nine criteria described in the NCP at 40 CFR 300.430(e)(9)(iii).*

**UPDATED RISK EVALUATION SUMMARY**

The HHRA presented in this TMSRA report revises the previous HHRAs...Lastly, the HHRA was revised based on Base Realignment and Closure Cleanup Team agreements during 2003 and 2004.

*The HHRA in the TMSRA addresses chemicals that are not radioactive. Potential radiological contamination will be addressed in a radiological addendum to the TMSRA. Both chemical and radiological contaminants will then be addressed together in the proposed plan. A radiological addendum to the TMSRA is being prepared to evaluate remediation alternatives for the radiological contamination.*

The HHRA estimated cancer risks and noncancer hazards.... [End of executive summary update]

[Start of Section 1.0 update]

## *1.1 PARCEL B CERCLA PROGRESS*

EPA guidance describes the CERCLA remedial process...Table 1-1 summarizes the CERCLA-related activities conducted at Parcel B. Parcel B has completed the steps through post-construction reporting (including the five-year review); however, information about the site that became available during the remedial action indicates that modifications to the selected soil and groundwater remedies should be considered. *The five-year review (Tetra Tech 2003b) concluded that the remedy selected in the ROD (Navy 1997) should be modified to be protective in the long term. The BCT has extended the schedule of CERCLA activities (contained in the FFA) to incorporate modifications to the Parcel B remedy and support the preparation of this TMSRA.*

*A ROD amendment will be proposed for Parcel B by the Navy if the Navy determines that proposed changes to the selected remedy based upon the evaluations in the TMSRA will "fundamentally alter the basic features of the selected remedy with respect to scope, performance, or cost" as described in the NCP at 40 CFR 300.435(c)(2)(ii). For example, the consideration of parcel-wide covers to address soil contamination instead of excavation may represent a fundamental change in the scope of the remedy. For groundwater, addition of active groundwater treatment methodologies to the remedy may be a fundamental change in the scope.*

The updated information about the ubiquitous nature of certain ~~chemicals~~ *metals* in soil, *the presence of methane and radiological contamination, the need to update certain cleanup levels,* and the more comprehensive understanding of groundwater, together with the ~~currently~~ planned land use, indicate the need to *revise the conceptual site model, evaluate* ~~support~~ additional remedial actions, and *evaluate* amending the ROD. This TMSRA provides the support for the decisions *regarding remediation alternatives* ~~in an updated proposed plan and ROD amendment~~

~~that will come later~~, in the same way that the FS supported the initial proposed plan and ROD. The TMSRA provides a practical path forward to *evaluate* ~~undertake~~ additional remedial actions that will support parcel transfer.

This document addresses ~~CERCLA regulated~~ chemicals *that are not radioactive.* Potential radiological contamination will be addressed in a radiological addendum to the TMSRA. Both chemical and radiological contaminants will then be addressed together in the proposed plan ~~and the ROD amendment~~.

## 1.2 NEED FOR REEVALUATION OF CURRENT REMEDY

*The five-year review (Tetra Tech 2003b) concluded that the remedy selected in the ROD (Navy 1997) should be modified to be protective in the long term. This section describes the rationale for reevaluating the current remedy based on the updated information gained at the site and necessary revisions to the conceptual site model (see Section 2.2 for discussion of the conceptual site model). Updated information includes items such as the ubiquitous nature of metals in soil across Parcel B, the presence of methane and mercury, the findings of the SLERA, changes in toxicity criteria, and findings from removal actions to address radiological contaminants.*

### 1.2.1 Soil

*The discrete release of chemicals, known as the "spill" model, was the basis for the remedial action selected in the ROD. Under this conceptual model, high chemical concentrations occur near the center of the release and concentrations decrease outward. The delineation process used in the remedial action followed this model: successive "step-out" samples were collected from release areas identified by the remedial investigation to define the extent of the release outward until all samples contained concentrations that were less than the ROD cleanup goals. The spill model for chemical releases was appropriate for many areas at Parcel B. The Navy successfully delineated and removed all contaminants above cleanup goals at 93 of 106 excavations implemented for the remedial action. The ubiquitous distribution of metals in soil, especially manganese, led to reevaluation of the remedy at the remaining 13 excavations at Parcel B.*

*The significant additional information gained from the sampling and excavation during the remedial action indicated that the spill model did not account for all areas where chemical concentrations exceeded cleanup goals. The Navy recognized that the spill model needed to be supplemented to account for these other areas. A group of seven metals, especially arsenic and manganese, consistently exceeded cleanup goals at locations across Parcel B. The widespread distribution of this group of metals in soil at Parcel B (that is, their ubiquitous nature) is related to the occurrence of these metals in the local bedrock that was quarried for fill during the expansion of HPS in the 1940s. These metals occur naturally in the Franciscan Formation bedrock (especially in the serpentinite, chert, and basalt rock types) and were distributed throughout all parcels, including Parcel B, as HPS was built. Although it is possible that some releases of these metals could have occurred from Navy activities, the range of concentrations of these metals at Parcel B is consistent with the range of concentrations in local bedrock. The*

*resulting distribution of metals concentrations in soil is nearly random across the parcel, and the spill model for release does not apply. However, the concentrations of metals in the bedrock fill sometimes exceed the ROD cleanup goals, and this fact is the primary reason that the "step-out" delineation process was not successful everywhere on Parcel B. Application of the spill conceptual model to the ubiquitous metals would result in the excavation of most of the bedrock fill at Parcel B to a depth of 10 feet below ground surface (the depth required by the ROD). Therefore, the Navy recognized the need to supplement the conceptual model to account for the ubiquitous distribution of metals in soil. Remedial alternatives in the TMSRA address ubiquitous metals using options such as containment beneath covers and institutional controls.*

*In addition to identifying the ubiquitous nature of several metals in the bedrock fill, sampling and excavation during the remedial action found that the areas at IR-07 and IR-18 contained fill that contained a high proportion of demolition debris. The highly nonuniform distribution of chemicals within the debris fill also did not conform to the spill model and, consequently, excavations at IR-07 and IR-18 often greatly exceeded their originally planned extents. Furthermore, methane was detected in soil gas at a small area of the debris fill at IR-07 (see Section 5.0 and Figure 5-5 for more discussion of methane). In addition, radiological contamination is present at Parcel B that was not known during preparation of the ROD. The debris fill, methane, and radiological contamination created additional needs to update the conceptual site model and the TMSRA considers remediation alternatives to address this new understanding of site conditions.*

*Comparison of the remedial action envisioned in the ROD to the actions completed to date illustrates the large difference between the planned and actual site conditions at Parcel B. The estimate in the ROD for the remedial action included removal of 38,000 cubic yards of soil over a period of 3 to 6 months at a cost of $11.2 million. The remedial action at Parcel B removed over 100,000 cubic yards of soil over an active excavation period of 31 months at a cost of more than $40 million. Figure 1-4 presents a comparison of the excavation areas estimated in the ROD to the actual remedial action excavations.*

*A reevaluation of the remedy selected in the ROD in light of the updated site information underscores the need to amend the ROD. The selected remedy would not be protective of human health and the environment based on the updated information about the site and revisions to human health toxicity criteria. The following bullets summarize the reevaluation of the original remedy against the two threshold and five balancing remedy selection criteria listed in the NCP at 40 CFR 300.430(e)(9)(iii). Section 6.0 presents a more detailed discussion, including a comparison of the original remedy to other alternatives developed in the TMSRA.*

*Current Soil Remedy*

- *Protectiveness – the original ROD alternative did not consider excavation below 10 feet bgs and it is likely that deeper excavation would be necessary to remove the source of methane at IR-07. The original ROD alternative also did not account for radiological contamination. Therefore, the rating for the original ROD alternative for overall protection of human health and the environment would be not protective based on the methane source remaining in place and radiological contamination.*

- *Compliance with ARARs – concentrations of methane in soil gas exceed allowable levels identified in chemical-specific ARARs; the current remedy would not meet the ARARs identified in the TMSRA.*

- *Long-term effectiveness – the current remedy would rank as poor based on the methane source remaining in place.*

- *Reduction of toxicity, mobility, and volume through treatment – excavation does not involve treatment and the current remedy would rank poor to begin with on this criterion and would still rank as poor based on updated information about the site.*

- *Short-term effectiveness – the current remedy would rank poor on this criterion based on the much longer time needed for implementation (more than 31 months to date versus 3 to 6 months) and the subsequent much longer exposure to workers and the community; the current remedy would not achieve the remedial action objectives unless much of the bedrock fill and the debris fill area were removed, resulting in more exposure to workers and the community.*

- *Implementability – the current remedy would rank as poor based on the large scale operation to remove bedrock fill and the debris fill area.*

- *Cost – the current remedy would rank as poor based on the significantly higher cost required (more than $40 million to date versus $11.2 million). Cost for full implementation would likely total more than $100 million.*

*Overall, the reevaluation of the current remedy would result in a determination of "not protective" based on protectiveness and compliance with ARARs.*

*In summary, the excavation and off-site disposal remedy for soil, as described in the ROD, would not be protective in the long term. Knowledge that the Navy has gained during the remedial action shows the need to (1) supplement the conceptual model to include the random distribution of ubiquitous metals in soil, account for methane, radiological contamination, and the debris fill area at IR-07 and IR-18, (2) evaluate amending the ROD, and (3) evaluate additional remedial actions for soil at Parcel B. This TMSRA evaluates potential modifications to the remedy for soil in accordance with revisions to the conceptual model to support additional remedial actions that will address remaining risks.*

### 1.2.2 Groundwater

*The remedy selected in the ROD for groundwater included lining storm drains, removing steam and fuel lines, restricting use of groundwater, and groundwater monitoring. However, the remedy selected for groundwater in the ROD should be revised based on (1) the large amount of new information available from the more than 6 years of groundwater monitoring data gathered at Parcel B, including the detection of chromium VI and mercury in groundwater, and (2) changes in the toxicity estimates and exposure assumptions for VOCs since the ROD was prepared. The toxicity characteristics of VOCs have been updated since the ROD was prepared. VOCs are now considered much more toxic via the inhalation pathway than when the ROD was prepared. Consequently, intrusion of VOC vapors into buildings is a more significant human health risk. In particular, the groundwater remedy in the ROD did not identify the VOC plume at IR-10 as requiring remediation, but this plume would now pose a much greater risk than estimated in the ROD. The ROD does not contain any active remediation options to address the cleanup of VOCs in groundwater.*

*The Navy has investigated the area of IR-10 in considerable detail since the ROD. The Navy installed more than 25 new groundwater monitoring wells in the area of IR-10 and conducted treatability studies to investigate methods to clean up the soil and groundwater. Treatability studies using soil vapor extraction (SVE) to remove VOCs from the unsaturated zone and injection of zero-valent iron (ZVI) to destroy VOCs in groundwater were successfully implemented at the IR-10 VOC plume. The TMSRA considers these and other remediation options to address the potential inhalation risks caused by VOCs that remain in soil and groundwater at IR-10.*

*Similar to the discussion above for soil, a reevaluation of the remedy selected in the ROD for groundwater against the NCP evaluation criteria underscores the need to amend the ROD. The remedy would not be protective of human health and the environment based on the updated information about the site and revisions to human health toxicity criteria and exposure assumptions. The following bullets summarize the reevaluation of the remedy against the two threshold and five balancing criteria. Section 6.0 presents a more detailed discussion, including a comparison of the original remedy to other alternatives developed in the TMSRA.*

*Current Groundwater Remedy*

- *Protectiveness – the current remedy does not include institutional controls to limit access to buildings and the remedy would not be considered protective of VOCs in groundwater that pose an unacceptable risk from vapor intrusion into buildings.*
- *Compliance with ARARs – the current remedy would meet the ARARs identified in the TMSRA.*
- *Long-term effectiveness – the current remedy would rank as poor based on the magnitude of residual risks remaining that are caused by VOCs.*

- *Reduction of toxicity, mobility, and volume through treatment – the current remedy does not contain any treatment component and, therefore, would rank as poor for this criterion.*

- *Short-term effectiveness – the current remedy includes only groundwater monitoring and would rank as excellent based on the minimal and controllable exposure to workers during monitoring.*

- *Implementability – the current remedy would rank as excellent based on the routine nature of groundwater monitoring.*

- *Cost – the current remedy would rank as poor based on the higher cost required (about $8 million to date versus the ROD estimate of $3.6 million); groundwater monitoring costs would continue to be incurred into the future. Cost for full implementation would likely total more than $10 million.*

*Overall, the reevaluation of the current remedy would result in a determination of "not protective."*

*In summary, the remedy for groundwater selected in the ROD needs to be expanded to account for the increased potential risk from VOCs in groundwater and provide remediation alternatives to address this risk. The TMSRA uses the large amount of new information from groundwater monitoring and treatability studies to evaluate modifications to the remedy for groundwater to support additional remedial actions that will address remaining risks.*

### 1.2.3 Shoreline

*Potential ecological risk to aquatic receptors along the shoreline of Parcel B was not evaluated in the ROD. The TMSRA contains a screening-level ecological risk assessment (SLERA) to evaluate risks to aquatic receptors and the TMSRA evaluates remediation alternatives to address these risks. The SLERA concluded that a variety of organic and inorganic chemicals in sediment along the shoreline and mercury in groundwater at IR-26 pose risk to aquatic receptors. The ROD needs to be amended to address potential ecological risks in addition to human health risks.*

### 1.2.4 Radiological

*Radiological contamination was not addressed by the ROD; however, radiological contamination is present at Parcel B. The ROD should be amended to memorialize the methods and cleanup goals for radiological contaminants that are being addressed by the basewide radiological removal action. A radiological addendum to the TMSRA is being prepared to evaluate remediation alternatives for the radiological contamination.*

### 1.3 FUTURE LAND USE

Based on the City of San Francisco's reuse plan..." [End of Section 1.0 update]

[Start of Section 6.0 update]

## 6.0 DETAILED ANALYSIS OF REMEDIAL ALTERNATIVES

This section provides a detailed analysis of each remedial alternative developed in Section 5.0. *This section also includes a detailed analysis of the remediation alternatives selected in the 1997 ROD and highlights the need to reevaluate the remedy.* This information will be used...

*This section also considers the remediation alternatives selected in the 1997 ROD (Navy 1997) and how the alternatives would rank in comparison to the two threshold and five balancing NCP evaluation criteria based on the updated information about Parcel B. Updated information includes items such as the ubiquitous nature of metals in soil across Parcel B, the presence of methane and mercury, the findings of the SLERA, changes in toxicity criteria, and findings from removal actions to address radiological contaminants.*

[Sections 6.1.1 through 6.1.5 describing the evaluation of Alternatives S-1 through S-5.]

### 6.1.6 Individual Analysis of Original ROD Soil Remediation Alternative

*The original ROD remedy for soil includes (1) excavation and disposal of contaminated soil, and (2) institutional controls to prevent exposure to COCs in soils that are left in place (below the maximum excavation depth). The following evaluation considers the rating of the remedial action if it were resumed and completed according to the cleanup goals in the ROD.*

#### 6.1.6.1 Overall Protection of Human Health and the Environment: Original ROD Soil Alternative

*The original ROD alternative did not consider excavation below 10 feet bgs and it is likely that deeper excavation would be necessary to remove the source of methane at IR-07. In addition, radiological contamination is present at Parcel B that was not known during preparation of the ROD. Therefore, the rating for the original ROD alternative for overall protection of human health and the environment would be not protective based on the methane source remaining in place and radiological contamination.*

#### 6.1.6.2 Compliance with ARARs: Original ROD Soil Alternative

*Chemical-specific ARARs associated with this alternative would not be met based on concentrations of methane detected in soil gas and the likely depth of the methane source. Therefore, the original ROD alternative would not meet ARARs.*

#### 6.1.6.3 Long-Term Effectiveness and Permanence: Original ROD Soil Alternative

*The factors evaluated under long-term effectiveness and permanence included the magnitude of residual risks and the adequacy and reliability of controls. Under the original ROD alternative, contaminated soil in excavated areas would be removed and disposed of off site. Excavation would continue until results of confirmation samples indicate remediation goals are met or until the excavation would extend to a depth of 10 feet bgs. Long-term effectiveness and permanence in areas where COCs are excavated is rated as excellent; however, excavation of most of the bedrock fill and all of the debris fill area would be required to remove all COCs. Excavation would not address the methane source because the source likely extends below 10 feet bgs. The rating for the original ROD alternative for long-term effectiveness and permanence is poor based on the methane source remaining in place.*

#### 6.1.6.4 Reduction of Toxicity, Mobility, or Volume through Treatment: Original ROD Soil Alternative

*The original ROD alternative includes excavation of contaminated soil and institutional controls. However, this alternative does not include treatment that would result in the destruction, transformation, or irreversible reduction in contaminant mobility. Therefore, the rating for the original ROD alternative for reduction of toxicity, mobility, or volume through treatment is poor.*

#### 6.1.6.5 Short-Term Effectiveness: Original ROD Soil Alternative

*Four factors are considered as part of the short-term effectiveness criteria and are assessed below for the original ROD alternative.*

*The community would be protected by implementing containment controls such as dust suppression during excavation and covers over the hauling trucks during off-site transportation.*

*Workers would be protected during soil excavation by implementing containment controls, such as dust suppression during excavation, stockpiling and loading trucks, and following health and safety protocols, including personal protective equipment and decontamination procedures. Institutional controls would require installing barriers, fences, and signs, and health and safety requirements and personal protective equipment protocols would be enforced to minimize worker exposure during these activities.*

*Construction efforts for the soil removal would involve most of the remaining areas of bedrock fill and all of the remaining debris fill and would include a very large volume of material; therefore, the adverse environmental impacts from removal and disposal would be large.*

*The estimated time required to implement the remaining excavation would be more than 1 year.*

*The rating for the original ROD alternative for short-term effectiveness is poor.*

#### 6.1.6.6 *Implementability: Original ROD Soil Alternative*

*Implementability includes technical and administrative feasibility and the availability of required resources. The alternative is technically feasible because excavation and hauling are considered conventional and commonplace technologies. However, the large scale of the excavation operation and complexities caused by the existing infrastructure (buildings and subsurface utilities) would decrease the implementability of this alternative. The rating for the original ROD alternative for implementability is poor.*

#### 6.1.6.7 *Cost: Original ROD Soil Alternative*

*The cost of the remedial action for soil under the ROD is about $40 million to date (not adjusted to current dollars—the total would increase if adjusted to the same cost basis as other alternatives in the TMSRA). This cost would increase substantially for full implementation (removal of most of the remaining bedrock fill and all of the debris fill); cost for full implementation would likely total more than $100 million. The rating for the original ROD alternative for cost is poor.*

#### 6.1.6.8 *Overall Rating: Original ROD Soil Alternative*

*The overall rating for the original ROD soil alternative would be not protective based on (1) lack of protectiveness because the methane source and radiological contamination would remain in place and (2) lack of compliance with ARARs based on methane detections in soil gas.*

### 6.2 COMPARISON OF SOIL REMEDIAL ALTERNATIVES

This section compares the five alternatives for soil *developed in the TMSRA and the original soil remedy selected in the ROD.* The discussion of each evaluation criterion generally proceeds from the alternative that best satisfies the criterion to the one that least satisfies the criterion. Table 6-2 summarizes the rating for each alternative and shows a comparison of the ratings of each alternative for the two threshold and five balancing NCP evaluation criteria.

### 6.2.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment is a threshold criterion. Protection is not measured by degree; rather, each alternative is considered as either protective or not protective. Alternatives S-2 through S-5 are protective. Alternative S-5 has excellent overall protection because it includes the most active remediation (using removal, treatment, and containment process options) that reduces potential exposure to contaminated soils. Alternatives S-2 through S-5 protect human health and the environment under the anticipated future land use of the site. Alternative S-1 does not address any risks at the site and hence does not provide any protection to human health and the environment. *The original ROD soil alternative does not address the methane source area (because it is below 10 feet bgs) and radiological*

*contamination and would not be protective of human health and the environment in the long term.*

### 6.2.2 Compliance with Applicable or Relevant and Appropriate Requirements

Compliance with ARARs is a threshold evaluation criterion. An alternative must either comply with ARARs or justification must be provided for a waiver. Alternatives S-2 through S-5 fulfill all the pertinent ARARs. Alternative S-1 *and the original ROD soil alternative* do not meet ARARs.

### 6.2.3 Long-Term Effectiveness and Permanence

Alternative S-5 is rated the highest because it includes treatment of VOCs using SVE plus the other effective and permanent technologies from both Alternatives S-3 and S-4. The magnitude of residual risks that would remain after remedial action would be highest for Alternative S-2, which relies on institutional controls to meet the RAOs, and lower for Alternatives S-3 (excavations), S-4 (covers), and S-5 (excavations, covers, and treatment) that reduce the toxicity and volume of contaminants. Alternatives S-2 through S-5 all provide long-term effectiveness in meeting the RAOs because they rely on continuous enforcement of institutional controls to maintain covers and access restrictions. Alternative S-3 provides long-term effectiveness and permanence for soil that contains organic compounds and lead that is excavated, but relies on access restrictions for other COCs. Alternative S-4 provides a permanent cover before development, but does not permanently remove any contamination (except for excavations in the methane *and mercury* source areas). *The original ROD soil alternative rates as poor based on the methane source remaining in place below 10 feet bgs and radiological contamination.* Since no action would be taken under Alternative S-1, it does not provide a long-term effective or permanent solution to the soil and sediment risks present at the site.

### 6.2.4 Reduction of Toxicity, Mobility, or Volume through Treatment

~~Alternative S-5 would reduce both the mobility and volume of the contaminated soil as well as treat VOCs in soil and is the only alternative that provides treatment of contaminants. As a result, Alternative S-5 is rated the highest. Alternative S-3 would reduce only the volume of contaminated soil and would rely on institutional controls to address exposure, while Alternative S-4 would reduce only the mobility through use of covers (although there would be some reduction in toxicity and volume from excavation at the methane source area). Alternative S-2 would reduce only exposure to contaminants after institutional controls are implemented.~~ *Alternatives S-2 through S-5 and the original ROD soil alternative do not include treatment that would result in the destruction, transformation, or irreversible reduction in contaminant mobility. Therefore, the overall rating for these alternatives for the reduction of toxicity, mobility, and volume through treatment is poor.* Alternative S-1 has no effect on the toxicity, mobility, or volume of contaminants at the site.

### 6.2.5 Short-Term Effectiveness

Alternative S-1 has the least effect on the community, remedial workers, or the environment because it includes no actions, but will not likely ever reach the RAOs. Alternatives S-2 and S-4 introduce less risk to the community, remedial workers, or the environment because they do not include excavation, hauling, and disposal of contaminated soil. Alternatives S-3, S-5, *and the original ROD soil alternative* include removing and hauling contaminated soil that would pose potential risk to the community, remedial workers, or the environment, although this risk is considered low and mitigation measures would be implemented. *The original ROD soil alternative involves much more excavation than the other alternatives and would pose the most risk to the community, remedial workers, or the environment.*

### 6.2.6 Implementability

Distinction among the alternatives for implementability is minimal. All alternatives require implementation of institutional controls. Installing covers (S-4) and excavating soil (S-3, S-5, *and the original ROD soil alternative*) are standard technologies that are easy to implement. Alternative S-5 would require more coordination to implement because it employs the most technologies. *The large scale of the excavation operation and complexities caused by the existing infrastructure would decrease the implementability of the original ROD soil alternative.* Alternative S-1 does not involve remedial technologies or institutional controls and requires no implementation.

### 6.2.7 Cost

Alternative S-1 requires no action; therefore, no costs are associated with this alternative. Alternative S-2 is the least costly ($5 million) because it includes only the shoreline revetment as an active remediation component before the property is transferred. Alternative S-3 is estimated to cost approximately $7.5 million, and Alternatives S-4 and S-5 — that include the covers as a process option — are estimated to cost approximately $8.8 million and $9.3 million. *The cost for full implementation of the original ROD soil alternative would likely total more than $100 million.* Estimated capital and O&M costs for each alternative are summarized in Table 6-1.

### 6.2.8 Overall Rating of Soil Alternatives

An overall rating was assigned to each alternative (see Table 6-2). Alternative S-5 is rated excellent overall for the two threshold and five balancing NCP evaluation criteria. Alternative S-5 is the most protective, because it includes excavation, treatment, and covers, although it has the highest cost. Alternative S-3, rated very good, is more protective than Alternative S-2 because contaminants are removed, although it is somewhat more expensive. Alternative S-4, rated very good, is considerably more expensive but is more protective than are

Alternatives S-2 or S-3 before development. Alternative S-2, rated good, is easiest to implement. *Alternative S-1 and the original ROD soil alternative are rated as not protective.*

[Sections 6.3.1 through 6.3.3 describing the evaluation of Alternatives GW-1 through GW-3]

### *6.3.4 Individual Analysis of Original ROD Groundwater Remediation Alternative*

*The original ROD remedy for groundwater includes (1) lining of storm drains to prevent infiltration of contaminated groundwater, (2) removal of steam and fuel lines, (3) institutional controls to prevent use of groundwater, and (4) groundwater monitoring for up to 30 years. The following evaluation considers the rating of the remedial action if it were completed according to the cleanup goals in the ROD.*

#### *6.3.4.1 Overall Protection of Human Health and the Environment: Original ROD Groundwater Alternative*

*The original ROD alternative would not provide protection to human health and the environment because it would not prevent exposure to VOC vapors that would be expected to accumulate in buildings as the result of vapor intrusion from groundwater. The original ROD alternative did not include institutional controls to limit access to buildings located over VOC plumes. Therefore, the rating for the original ROD groundwater alternative for overall protection of human health and the environment is not protective.*

#### *6.3.4.2 Compliance with ARARs: Original ROD Groundwater Alternative*

*No chemical-specific ARARs are pertinent to the original ROD alternative because no active treatment or removal of groundwater is proposed. The location-specific ARARs identified for activities that would affect San Francisco Bay and the coastal zone at Parcel B would be met. Action-specific ARARs for groundwater monitoring would be met by developing and employing appropriate monitoring protocols. As a result, the original ROD groundwater alternative would meet ARARs.*

#### *6.3.4.3 Long-Term Effectiveness and Permanence: Original ROD Groundwater Alternative*

*The factors evaluated under long-term effectiveness and permanence include the magnitude of residual risks and the adequacy and reliability of controls. Under the original ROD groundwater alternative, groundwater would be monitored, but not treated. Sources such as the VOCs at IR-10 and the mercury at IR-26 would not be addressed. The risk to ecological receptors from COCs in groundwater would not be evaluated or addressed. Consequently, risks posed by exposure to COCs in groundwater would not be mitigated. Overall, the rating for the original ROD groundwater alternative for long-term effectiveness and permanence is poor.*

#### 6.3.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment: Original ROD Groundwater Alternative

*The original ROD alternative would not reduce the toxicity, mobility, or volume of contamination through active remediation. Therefore, the overall rating for the original ROD groundwater alternative for reducing the toxicity, mobility, or volume through treatment is poor.*

#### 6.3.4.5 Short-Term Effectiveness: Original ROD Groundwater Alternative

*Four factors are considered as part of the short-term effectiveness criteria and are assessed below for the original ROD groundwater alternative.*

*The original ROD groundwater alternative would not present any new risks to the community. Minimal health risks would be posed by the long-term monitoring that would periodically extract and collect small amounts of groundwater for sampling.*

*No remedial action workers would be exposed to risks because no active remedy to groundwater would be applied. Minimal risk to the workers would be posed during the groundwater monitoring events, but proper personal protective equipment and health and safety protocols would minimize these risks.*

*No adverse environmental impacts would result from construction and implementation of the original ROD groundwater alternative because no groundwater treatment is proposed. Minimal exposure to groundwater would occur during the long-term groundwater monitoring program.*

*Long-term monitoring for the original ROD groundwater alternative would likely extend over 30 years, although the field activities for this monitoring occur for short periods with long intervals of inactivity.*

*Based on this evaluation, the rating for the original ROD groundwater alternative for short-term effectiveness is excellent.*

#### 6.3.4.6 Implementability: Original ROD Groundwater Alternative

*Implementability includes technical and administrative feasibility and the availability of required resources. No construction or O&M would be required to implement the remaining groundwater monitoring under the original ROD groundwater alternative; therefore, this alternative is technically and administratively feasible. Long-term groundwater monitoring is a routine activity and requires a moderate level of commonly available resources. The overall rating for the original ROD groundwater alternative for implementability is excellent.*

#### 6.3.4.7 Cost: Original ROD Groundwater Alternative

*The cost of the remedial action for groundwater under the ROD is about $8 million to date (not adjusted to current dollars—the total would increase if adjusted to the same cost basis as other alternatives in the TMSRA). Groundwater monitoring costs would continue to be incurred into the future. Cost for full implementation would likely total more than $10 million. The rating for the original ROD groundwater alternative for cost is poor.*

#### 6.3.4.8 Overall Rating: Original ROD Groundwater Alternative

*The overall rating for the original ROD groundwater alternative would be not protective.*

## 6.4 COMPARISON OF GROUNDWATER REMEDIAL ALTERNATIVES

This section compares the four groundwater alternatives *developed in the TMSRA and the original groundwater remedy selected in the ROD.* The discussion of each evaluation criterion generally proceeds from the alternative that best satisfies the criterion to the one that least satisfies the criterion. Table 6-2 summarizes the ratings for each alternative and shows a comparison of the ratings for each alternative for the two threshold and five balancing NCP evaluation criteria.

### 6.4.1 Overall Protection of Human Health and the Environment

Overall protection of human health and the environment is a threshold criterion. Protection is not measured by degree; rather, each alternative is considered either protective or not protective. Alternatives GW-2, GW-3A, and GW-3B are protective. Alternative GW-1 *and the original ROD groundwater alternative* are not protective. Both Alternatives GW-3A and GW-3B have the highest rating and would be protective of human health and the environment. In addition, Alternatives GW-3A and GW-3B would accelerate the contaminant degradation that would reduce the duration of implementation and potentially allow reducing some institutional controls over time. Alternative GW-2 would also be protective of human health and the environment, but would rely more on institutional controls and provides less certainty. Alternative GW-1 *and the original ROD groundwater alternative* have the lowest rating because they are not protective of human health and the environment.

### 6.4.2 Compliance with Applicable or Relevant and Appropriate Requirements

Compliance with ARARs is a threshold evaluation criterion. An alternative must either comply with ARARs or grounds for a waiver must be provided. Alternatives GW-2, GW-3A, GW-3B, *and the original ROD groundwater alternative* meet ARARs. Alternative GW-1 does not meet ARARs.

### 6.4.3 Long-Term Effectiveness and Permanence

Alternatives GW-3A and GW-3B would provide the highest level of long-term effectiveness and permanence because VOCs would be degraded. Alternative GW-2 would provide a lower level of effectiveness and permanence because groundwater plumes would be addressed only through institutional controls and monitoring to assess the potential migration of contaminants. *The original ROD groundwater alternative would provide only groundwater monitoring and would not address sources such as the VOCs at IR-10 and the mercury at IR-26. This alternative would have a low rating for long-term effectiveness and permanence. Since no action would be taken under Alternative GW-1, it does not provide a long-term effective or permanent solution to the soil and sediment risks present at the site.*

### 6.4.4 Reduction of Toxicity, Mobility, or Volume through Treatment

Alternatives GW-3A and GW-3B are rated the highest because they both reduce the toxicity and volume of the contaminants by active treatment of the VOC plume. Exposure to these contaminants would also be addressed through institutional controls and groundwater monitoring. Alternatives GW-1, GW-2, *and the original ROD groundwater alternative* would not reduce the toxicity, mobility, or volume of contaminants in the groundwater. Alternative GW-2 *and the original ROD groundwater alternative* would not reduce the toxicity or volume of contaminants *through treatment*, but would monitor the mobility of the contamination through the long-term groundwater monitoring program.

### 6.4.5 Short-Term Effectiveness

Alternative GW-1 has an excellent short-term effectiveness rating, as no remedial actions are conducted under this alternative. All of the alternatives scored well in terms of short-term effectiveness according to the criteria. Alternatives GW-3A and GW-3B pose a slightly greater risk through use of active *in situ* treatment compared with Alternative GW-2. Alternatives GW-2, GW-3A, GW-3B, *and the original ROD groundwater alternative* all pose a very low risk to workers during implementation of the groundwater monitoring program.

### 6.4.6 Implementability

Alternatives GW-1, GW-2, *and the original ROD groundwater alternative* have the highest rating and are technically the easiest to implement. Alternative GW-2 *and the original ROD groundwater alternative* would require more resources to conduct the long-term groundwater monitoring program; however, these resources are readily available. Alternatives GW-3A and GW-3B are more complex to implement because of the injection treatment; however, this treatment is a one-time injection that would reduce the resources required for groundwater monitoring as compared with Alternative GW-2 *and the original ROD groundwater alternative.* Alternative GW-3A may be easier to implement because the injected substrates are slow-release compounds that continue to degrade COCs over time. Their slow release increases the potential to react with contaminants as they disperse in the aquifer.

### 6.4.7 Cost

Estimated total capital costs for each alternative are summarized in Table 6-1. Alternative GW-1 is rated the highest because no cost is associated because no actions would be taken. Alternative GW-2 has a moderate cost ($1.62 million), most of which is for the 30 years of long-term monitoring. Alternative GW-3A has a slightly higher cost ($2.02 million). Alternative GW-3B has the highest capital cost because of the cost of the ZVI additive ($2.35 million). *The cost for full implementation of the original ROD groundwater alternative would likely total more than $10 million.*

### 6.4.8 Overall Rating of Groundwater Alternatives

Alternative GW-3A has the highest overall rating. The treatment effectively reduces risks to human health and environment and the cost is similar to Alternative GW-2 while actively treating COCs in groundwater. Alternative GW-3B ranks well also, but the higher cost makes it less advantageous. Alternative GW-2 is easy to implement, but it is not as effective as Alternatives GW-3A and GW-3B. Alternative GW-1 *and the original ROD groundwater alternative* are not protective.

## 6.5 *SUMMARY AND CONCLUSION*

*This section summarizes the rationale for reevaluating the current remedy based on the updated information about the site and subsequent revisions to the conceptual site model.*

### *6.5.1 Soil*

*The excavation and off-site disposal remedy selected in the ROD would not be protective in the long term as it was originally envisioned because the conceptual site model that formed the basis for the remedy was incomplete. The discrete release of chemicals, known as the "spill" model, was the basis for the remedial action selected in the ROD. Although this conceptual model worked well at many areas of Parcel B, the significant additional knowledge gained from the sampling and excavation during the remedial action indicated that the spill model did not account for all areas where chemical concentrations exceeded cleanup goals and that the conceptual site model needed to be supplemented.*

*A group of seven metals, especially arsenic and manganese, consistently exceeded cleanup goals at locations across Parcel B. The widespread distribution of this group of metals in soil at Parcel B (that is, their ubiquitous nature) is related to the occurrence of these metals in the local bedrock that was quarried for fill during the expansion of HPS in the 1940s. These metals occur naturally in the Franciscan Formation bedrock and were distributed throughout all parcels, including Parcel B, as HPS was built. The resulting distribution of metals concentrations in soil is nearly random across the parcel, and the spill model for release does not apply. However, the concentrations of metals in the bedrock fill sometimes exceed the ROD cleanup goals, and this fact is the primary reason that the "step-out" delineation process was not successful everywhere*

*on Parcel B. Application of the original ROD cleanup goals to the ubiquitous metals would result in the excavation of most of the bedrock fill at Parcel B to a depth of 10 feet bgs. Remedial alternatives in the TMSRA take into account the revised conceptual site model and address ubiquitous metals using options such as containment beneath covers and institutional controls.*

*In addition to identifying the ubiquitous nature of several metals in the bedrock fill, sampling and excavation during the remedial action found that the areas at IR-07 and IR-18 contained fill that contained a high proportion of demolition debris. The highly nonuniform distribution of chemicals within the debris fill also did not conform to the spill model and, consequently, excavations in this area often greatly exceeded their originally planned extents. Furthermore, methane was detected in soil gas at a small area of the debris fill at IR-07. In addition, radiological contamination is present at Parcel B that was not known during preparation of the ROD. The debris fill, methane, and radiological contamination created additional needs to update the conceptual site model and the TMSRA considers remedial alternatives to address these new conditions.*

*A reevaluation of the remedy selected in the ROD in light of the updated site information underscores the need to reassess remediation alternatives. The selected remedy would not be protective of human health and the environment based on the updated information about the site.*

### 6.5.2 Groundwater

*The remedy selected for groundwater in the ROD should be revised based on (1) the large amount of new information available from the more than 6 years of groundwater monitoring data gathered at Parcel B, including the detection of chromium VI and mercury in groundwater, and (2) changes in the toxicity estimates and exposure assumptions for VOCs used for risk assessment since the ROD was prepared. VOCs are now considered much more toxic via the inhalation pathway than when the ROD was prepared. Consequently, intrusion of VOC vapors into buildings is considered a more significant human health risk. In particular, the groundwater remedy in the ROD did not identify the VOC plume at IR-10 as requiring remediation, but this plume would pose a much greater risk than estimated in the ROD. The ROD does not contain any active remediation options to address the cleanup of VOCs in groundwater.*

*Similar to the discussion above for soil, a reevaluation of the remedy selected in the ROD for groundwater against the NCP evaluation criteria highlights the need to reassess remediation alternatives. The remedy would not be protective of human health and the environment based on the potential risk from vapor intrusion of VOCs from groundwater.*

### 6.5.3 Shoreline

*Potential ecological risk to aquatic receptors along the shoreline of Parcel B was not evaluated in the ROD. The SLERA evaluated risks to aquatic receptors and the TMSRA evaluates*

*remediation alternatives to address these risks. The SLERA concluded that a variety of organic and inorganic chemicals in sediment along the shoreline and mercury in groundwater at IR-26 pose risk to aquatic receptors. The ROD needs to be amended to address potential ecological risks in addition to human health risks.*

### 6.5.4 Radiological

*Radiological contamination was not addressed by the ROD; however, radiological contamination is present at Parcel B. The ROD needs to be amended to memorialize the methods and cleanup goals for radiological contaminants that are being addressed by the basewide radiological removal action. A radiological addendum to the TMSRA is being prepared to evaluate remediation alternatives for the radiological contamination.*

### 6.5.5 CONCLUSION

*The excavation and off-site disposal remedy for soil, as described in the ROD, would not be protective in the long term. Site knowledge that the Navy has gained during the remedial action shows the need to (1) supplement the conceptual model to include the random distribution of ubiquitous metals in soil, methane, radiological contamination, and debris fill areas, (2) evaluate amending the ROD, and (3) evaluate additional remedial actions for soil at Parcel B. This TMSRA evaluates modifications to the remedy for soil in accordance with revisions to the conceptual model to support additional remedial actions that will address remaining risks.*

*Likewise, the remedy for groundwater selected in the ROD needs to be expanded to account for the increased potential risk from VOCs and mercury in groundwater and provide remediation alternatives to address this risk. The TMSRA uses the large amount of new information from groundwater monitoring and treatability studies to evaluate modifications to the remedy for groundwater to support additional remedial actions that will address remaining risks.*

*The ROD did not address potential ecological risk to aquatic receptors along the shoreline. The TMSRA estimates risk and evaluates remediation alternatives to address these risks.*

*Finally, the ROD did not address radiological contamination. The ROD needs to be amended to memorialize the methods and cleanup goals for radiological contaminants that are being addressed by the basewide radiological removal action. A radiological addendum to the TMSRA is being prepared to evaluate remediation alternatives for the radiological contamination.*

[End of Section 6.0 update]

# PARTIALLY SCANNED
# OVERSIZE ITEM(S)

See document # 2222212
for partially scanned image(s).

For complete hardcopy version of the oversize document
contact the Region IX Superfund Records Center

## TABLE 6-2: RANKING OF REMEDIAL ALTERNATIVES FOR SOIL AND GROUNDWATER

Parcel B Technical Memorandum in Support of a Record of Decision Amendment, Hunters Point Shipyard, San Francisco, California

| | Overall Protection of Human Heath and the Environment | Compliance with ARARs[a] | Long-Term Effectiveness and Permanence | Reduction of Toxicity, Mobility or Volume through Treatment | Short-Term Effectiveness | Implementability | Cost ($ Million) | Overall Rank by Alternative |
|---|---|---|---|---|---|---|---|---|
| **SOIL ALTERNATIVES** | | | | | | | | |
| Alternative S-1: No Action | Not Protective | Not Applicable | ○ | ○ | ◑ | ● | 0 | ○ |
| Alternative S-2: Institutional Controls and Shoreline Revetment | Protective | Meets ARARs | ◑ | ◐ | ◑ | ◑ | 5.0 | ◑ |
| Alternative S-3: Excavation, Methane and Mercury Source Removal, Disposal, Institutional Controls, and Shoreline Revetment | Protective | Meets ARARs | ◑ | ◐ | ◑ | ◑ | 7.5 | ◑ |
| Alternative S-4: Covers, Methane and Mercury Source Removal, Disposal, Institutional Controls, and Shoreline Revetment | Protective | Meets ARARs | ◑ | ◐ | ◑ | ◑ | 8.8 | ◑ |
| Alternative S-5: Excavation, Methane and Mercury Source Removal, Disposal, Covers, SVE, Institutional Controls, and Shoreline Revetment | Protective | Meets ARARs | ● | ◑ | ◑ | ◑ | 9.3 | ● |
| Original ROD: Excavation, Disposal, and Institutional Controls | Not Protective | Does Not Meet ARARs | ◐ | ◐ | ◐ | ◐ | >100 | ○ |
| **GROUNDWATER ALTERNATIVES** | | | | | | | | |
| Alternative GW-1: No Action | Not Protective | Not Applicable | ○ | ◐ | ◑ | ● | 0 | ○ |
| Alternative GW-2: Long-Term Monitoring of Groundwater and Institutional Controls | Protective | Meets ARARs | ◑ | ◐ | ● | ● | 1.6 | ◑ |
| Alternative GW-3A: *In Situ* Groundwater Treatment with Biological Substrate Injection, Reduced Groundwater Monitoring, and Institutional Controls | Protective | Meets ARARs | ● | ● | ◑ | ◑ | 2.0 | ● |
| Alternative GW-3B: *In Situ* Treatment with ZVI Injection, Reduced Groundwater Monitoring, and Institutional Controls | Protective | Meets ARARs | ◑ | ● | ◑ | ◑ | 2.3 | ◑ |
| Original ROD: Line Storm Drains, Remove Steam and Fuel Lines, Institutional Controls, and Groundwater Monitoring | Not Protective | Meets ARARs | ◐ | ◐ | ● | ● | >10 | ○ |

Legend:

- ○ Not acceptable
- ◐ Poor
- ◑ Good
- ◑ Very Good
- ● Excellent

Notes:

a Overall protection of human health and the environment and compliance with ARARs are threshold criteria and alternatives are judged as either meeting or not meeting the criteria.
ARAR Applicable or relevant and appropriate requirement
SVE Soil vapor extraction
ZVI Zero-valent iron

**ATTACHMENT 2**

## ATTACHMENT 2

Replacement text discussing institutional controls for Section 4.3.2.1 of draft TMSRA, starting on page 4-15.

### Institutional Controls in General

Institutional controls are legal and administrative mechanisms used to implement land use and access restrictions that are used to limit the exposure of future landowner(s) and/or user(s) of the property to hazardous substances present on the property, to maintain the integrity of the remedial action until remediation is complete and remediation goals have been achieved, and to assure containment of hazardous substances remaining on the property in vapors, soils or contaminated groundwater after remedial actions have been taken. Institutional controls may remain on a property even after remediation goals have been met in cases where those goals were selected at levels that accounted for the application of institutional controls. Institutional controls would likely remain in place unless the remedial action taken would allow for unrestricted use of the property. Monitoring and inspections are conducted to assure that the land use restrictions are being followed.

Legal mechanisms include proprietary controls such as restrictive covenants, negative easements, equitable servitudes, and deed notices. Administrative mechanisms include notices, adopted local land use plans and ordinances, construction permitting, or other existing land use management systems that may be used to ensure compliance with use restrictions.

The Navy has determined that it will rely upon proprietary controls in the form of environmental restrictive covenants as provided in the "Memorandum of Agreement Between the United States Department of the Navy and the California Department of Toxic Substances Control" and attached covenant models (Navy and DTSC 2000) (hereinafter referred to as "Navy/DTSC MOA"). Appendix G contains the Navy/DTSC MOA.

More specifically, land use restrictions will be incorporated into and implemented through two separate legal instruments as provided in the Navy/DTSC MOA:

1. Restrictive covenants included in one or more Quitclaim Deeds from the Navy to the property recipient.

2. Restrictive covenants included in one or more "Covenant to Restrict Use of Property" entered into by the Navy and DTSC as provided in the Navy/DTSC MOA and consistent with the substantive provisions of Cal. Code Regs. tit. 22 § 67391.1.

The "Covenant(s) to Restrict Use of Property" will incorporate the land use restrictions into environmental restrictive covenants that run with the land and that are enforceable by DTSC against future transferees. The Quitclaim Deed(s) will include the identical land use restrictions in environmental restrictive covenants that run with the land and that will be enforceable by the Navy against future transferees.

The "Covenant(s) to Restrict Use of Property" and Deed(s) shall provide that a Parcel B Risk Management Plan ("Parcel B RMP") shall be prepared by the City of San Francisco and approved by the Navy and FFA Signatories. The Parcel B RMP shall be discussed in the Parcel B ROD amendment and shall be attached to and incorporated by reference into the Covenant(s) to Restrict Use of Property and Deed(s) as an enforceable part thereof. It shall specify soil and groundwater management procedures for compliance with the remedy selected in the Parcel B ROD amendment. The Parcel B RMP shall identify the roles of local, state, and federal government in administering the Parcel B RMP and shall include, but not be limited to, procedures for any necessary sampling and analysis requirements, worker health and safety requirements, and any necessary site-specific construction and/or use approvals that may be required.

Land use restrictions will be applied to the property and included in findings of suitability to transfer, findings of suitability for early transfer, "Covenant(s) to Restrict Use of Property" between the Navy and DTSC, and any Quitclaim Deed(s) conveying real property containing Parcel B at HPS.

**Access**

The Navy and FFA Signatories and their authorized agents, employees, contractors and subcontractors shall have the right to enter upon HPS Parcel B to conduct investigations, tests, or surveys; inspect field activities; or construct, operate, and maintain any response or remedial action as required or necessary under the cleanup program, including but not limited to monitoring wells, pumping wells, treatment facilities, and cap/containment systems.

**Implementation**

The Navy shall address institutional control implementation and maintenance actions including periodic inspections and reporting requirements in the preliminary and final remedial design (RD) reports to be developed and submitted to the FFA Signatories for review pursuant to the FFA (see "Navy Principles and Procedures for Specifying, Monitoring and Enforcement of Land Use Controls and Other Post-ROD Actions" attached to January 16, 2004 DoD memorandum titled "Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Record of Decision (ROD) and Post-ROD Policy"). The preliminary and final RD reports are primary documents as provided in Section 7.3 of the FFA.

The process options related to institutional controls will be retained for development and included in the detailed evaluation of remedial alternatives.

## Land Use Restrictions:

The following sections describe the institutional control objectives to be achieved through land use and activity restrictions for Parcel B in order to ensure that any necessary measures to protect human health and the environment and the integrity of the remedy have been undertaken.

**Restricted Land Uses**

The following restricted land uses for property throughout Parcel B at HPS must be reviewed and approved by the FFA Signatories in accordance with the "Covenant(s) to Restrict Use of the Property," Quitclaim Deed(s), and Parcel B RMP prior to use of the property for any of the restricted uses:

a. A residence, including any mobile home or factory built housing, constructed or installed for use as residential human habitation,

b. A hospital for humans,

c. A school for persons under 21 years of age,

d. A day care facility for children, or

e. Any permanently occupied human habitation other than those used for commercial or industrial purposes.

**Restricted Activities**

The following restricted activities throughout HPS Parcel B must be conducted in accordance with the "Covenant(s) to Restrict Use of Property", Quitclaim Deed(s), and the Parcel B RMP, which will be reviewed and approved by the FFA Signatories:

a. "Land disturbing activity" which includes but is not limited to: (1) excavation of soil, (2) construction of roads, utilities, facilities, structures, and appurtenances of any kind, (3) demolition or removal of "hardscape" (for example, concrete roadways, parking lots, foundations, and sidewalks) existing at the time of the ROD amendment issuance, and (4) any other activity that involves movement of soil to the surface from below the surface of the land or causes the preferential movement of known contaminated groundwater. Any subsurface intrusive activities that might result in, or facilitate, the movement of contaminated groundwater.

b. Alteration, disturbance, or removal of any component of a response or cleanup action (including but not limited to pump-and-treat facilities, revetment walls and shoreline protection, and soil cap/containment systems); groundwater extraction, injection, and monitoring wells and associated piping and equipment; or associated utilities.

c. Extraction of groundwater and installation of new groundwater wells.

d. Removal of or damage to security features (for example, locks on monitoring wells, survey monuments, fencing, signs, or monitoring equipment and associated pipelines and appurtenances).

**Prohibited Activities**

The following activities are prohibited throughout HPS Parcel B:

a. Growing vegetables or fruits in native soil for human consumption.

b. Use of groundwater.

## Additional Land Use Restrictions Relating to VOC Vapors at Specific Locations within Parcel B.

The restricted land uses set forth above must be approved by the FFA Signatories in accordance with the "Covenant to Restrict Use of the Property," Quitclaim Deed, and Parcel B RMP prior to such use of the property within the area requiring institutional controls (ARIC) for VOC vapors in order to ensure that the risks of potential exposures to VOC vapors are reduced to acceptable levels that are adequately protective of human health. Initially, the ARIC will include all of Parcel B. This can be achieved through engineering controls or other design alternatives which meet the specifications set forth in the ROD amendment, RD reports, LUC RD report, and Parcel B RMP. The Parcel B RMP shall provide for adequate soil, vapor, and groundwater sampling and analysis for VOCs. The ARIC may be modified by the FFA Signatories as the soil contamination areas and groundwater contaminant plumes that are producing unacceptable vapor inhalation risks are reduced over time.